

64 & 128
Software
Preview!

XPressCard 128—Filing Power!

March
1988

\$3.00
\$4.25 Canada
02220

COMPUTE!'s GAZETTE™

FOR COMMODORE PERSONAL COMPUTER USERS

EXCLUSIVE
INTERVIEW!

GEOS: What's Next?

Berkeley Softworks
President Reveals

- Super New Upgrades
- Latest 64 & 128 Software
- Commodore-Apple Networking
- And More

PLUS!

Basically Music

A powerful, complete
composition tool for the 64

Big Screen

Turn your 64 into a super
graphics machine

Oil Defense

Solve an interplanetary crisis
in this fast-paced, arcade-style
game for the 64



DEMON STALKERS™

100 levels,
2473 ghosts, 586 scrolls
—and one wicked demon

Blast mad mages, mutant rats, and murderous monsters. Explore mysterious multi-level mazes. Annihilate hordes of ghosts, snappers, and dervishes to claim magical artifacts and treasure. The action won't stop until you get to the bottom of it all — and hand Calvrak the Demon a one-way ticket to oblivion.

GET YOUR DEMON STALKERS DEMO DISK!

Three wicked levels of manic arcade action. Send your name, address, and a check for \$2 (to cover shipping and handling) to Demon Stalkers Demo Disk, Electronic Arts Direct Sales, P.O. Box 7530, San Mateo, CA 94403.



The deeper you go, the harder it gets. (You might want to bring along a friend to help.) But don't wait 'til you find a Slow Death curse to use the Save Game command.



Scrolls give you hints, magic, and the saga of the Marble Vaults. If you'd rather, write some history of your own.



Use the Dungeon Construction Set to design your own worst nightmare... and then inflict it on your friends. With over 200 design options, Demon Stalkers' horrors can be as infinite as your imagination.



ELECTRONIC ARTS®

TO PURCHASE DEMON STALKERS: Visit your retailer. Or call 800-245-4525 (in CA 800-562-1112) between 8am and 5pm Pacific time, and place a direct order on your Mastercard or VISA. Or order by mail by sending a check, money order, or VISA/Mastercard information to the address above. C64 version is \$29.95, plus \$3 shipping and handling. CA residents add 6% sales tax.

Demon Stalkers is a trademark of Electronic Arts. Commodore 64 is a registered trademark of Commodore Business Machines, Ltd.



Bring your Commodore® to life with a **FREE** modem and software!

Now you can plug your Commodore into an exclusive network that's useful, easy, fun and inexpensive. Join Q-Link now and we'll give you a free modem and software to get you started.

Enjoy **unlimited access** to a wide range of Q-Link "Basic" services for a set fee of only \$9.95 a month. Get help from Commodore experts — use the Hotline to ask Commodore questions, or search the database of information from Commodore to answer your questions on the spot. Access Grolier's Academic American Encyclopedia™, the latest news and entertainment updates.

Special Q-Link "Plus" services let you expand your software library with **more than 10,000 public domain programs** — games, graphics, business and educational software and much more! Also, you can preview new copyrighted software before you buy. Get answers to your software questions from Berkeley Softworks, Electronic Arts and Activision, to name a few. Participate in full-color, multi-player games like Casino (includes Blackjack, Poker, Bingo and the Slots), Chess and Bridge. "Plus" services cost only an extra 8 cents per minute — **and your first hour of "Plus" service usage each month is free!**

Offer valid in the continental U.S. and Canada for new members only. Expires 6/30/88. Prices subject to change without notice. There is a communications surcharge for connection to Q-Link from Canada. 6 cents (U.S.) per minute from Montreal, Vancouver, Ottawa, Toronto, Quebec, Windsor, Kitchener and Calgary using the Tymnet network, and 15 cents (U.S.) per minute from over 85 other locations using the DATAPAC network. Quantum reserves the right to substitute a modem comparable to the Commodore 1660.

With Q-Link, you can sharpen your computer skills... connect with people... discover new ways to get smart... save money every day... plus have a lot of fun!

No-risk guarantee. Try Q-Link without risk. If, at any time, for any reason, you are not completely satisfied, you may cancel your membership.

Order your Q-Link software and modem today by mailing this coupon to Q-Link, 8619 Westwood Center Drive, Vienna, VA 22180 or for faster service call toll-free: **1-800-782-2278 Ext. 1260**

Q-LINK RESERVATION FORM

Choose one:

- ☐ **I need a modem.** Start my Q-Link membership by charging me now for my first 4 months at \$39.80, and send me the FREE Q-Link software and a FREE Commodore 300 baud auto-dial modem (model 1660—retail value \$69.95).
- ☐ **I already have a modem.** Send me my FREE Q-Link software and start my Q-Link membership by charging me now for my first month of membership at \$9.95.

Full name _____

Address _____

(No P.O. Boxes)

City _____

State _____

Zip _____

Homephone _____

Choose your method of payment:

☐ Please charge my credit card.

☐ Check enclosed.

☐ Master Card ☐ Visa

Acct# _____

Exp. _____

Signature _____

Call toll-free 1-800-782-2278 Ext. 1260 or mail this coupon to:

Q-Link, 8619 Westwood Center Drive,
Vienna, VA 22180



The Commodore Connection.

SCIENTISTS / STOP THE AGI

Time passes. Things get old. Let's face it, even Willie Mays retired. So there's no way your Commodore can compete with a newer machine, right?

Wrong.

The fact is that there's actually more power in your Commodore 64 or 128 than when you bought it. All you need is GEOS or GEOS 128 to find it.

GEOS is the revolutionary operating system that works your hardware up to seven times harder than it's ever worked before. Loading. Processing. Accessing information. All at the mere touch

of a mouse or joystick.

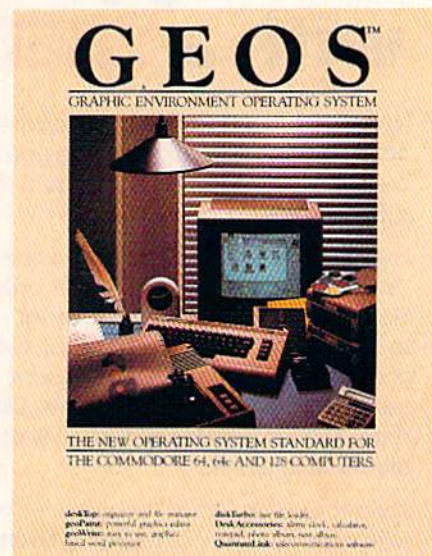
Time Warps Discovered

With GEOS, everything speeds up. Including you. Because the system is incredibly fast and ridiculously easy to learn: GEOS shows you options, you point at what you want and click your mouse.

End of lesson.

Now, once you know that, you know how every other GEOS application works, too. Like geoWrite, which lets you punch up paragraphs with five different fonts. Or geoPaint, which dresses up diagrams with an arsenal of artistic appliances. Both are built

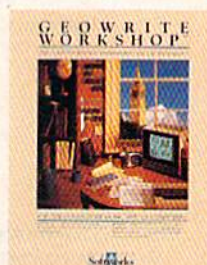
right into the GEOS disk. And when you put them together with geoWrite Workshop's LaserWriter compatibility, every new GEOS document comes out looking like an old master.



GEOPUBLISH
NEW The desktop publishing program that lets you design formats, column widths and page layouts. Accepts any geoWrite text and converts non-GEOS text. Wraps text around graphics automatically. Headline fonts up to 192 pt. Complete graphics toolbox.



GEOCALC
The GEOS-compatible, number-crunching spreadsheet for tracking and analyzing numerical data. Create your own formulas, perform calculations for anything from simple geometry to "what if" cost projections.



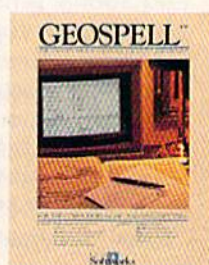
GEOWRITE WORKSHOP
NEW All the GEOS-compatible tools a writer needs, including new geoWrite 2.1 with headers, footers, margins to 8" and features to justify, center, search and replace text. Includes a Text Grabber (for converting text from programs like Paper Clip), geoMerge and LaserWriter printing capability.



GEOFILE
The GEOS-compatible database manager that sorts, edits and prioritizes whatever data you feed it. You fill out the "input form," specify your command, and geoFile takes it from there.



GEOPROGRAMMER
NEW A programmer's dream for writing your own programs or supercharging someone else's. With easy yet mind-boggling features like graphics that insert by simply cutting and pasting directly from geoPaint. Comes with geoAssembler, geoLink and geoDebugger for modular assembly and testing.



GEOSPELL
NEW Over 28,000 word geoDictionary for checking spelling. Lets you add words, switch dictionaries, edit, and automatically search and replace. Customize and create fonts up to 48 pt. with geoFont.

AT BERKELEY ING PROCESS!

Avoid Old Age Forever!

But how does all this affect your Commodore's future? Well, it means you don't ever have to worry about it becoming obsolete, because there are all kinds

of GEOS applications for almost every purpose.

You can finally get organized with geoFile, the database that searches, finds and lists almost anything that you want to search, find and list. You can manipulate mathematics or figure out financial formulas with geoCalc. If writing's your style, geoWrite Workshop can help you hammer out any kind of report. And geoPublish is the desktop publishing program that is still making headlines throughout the entire industry.

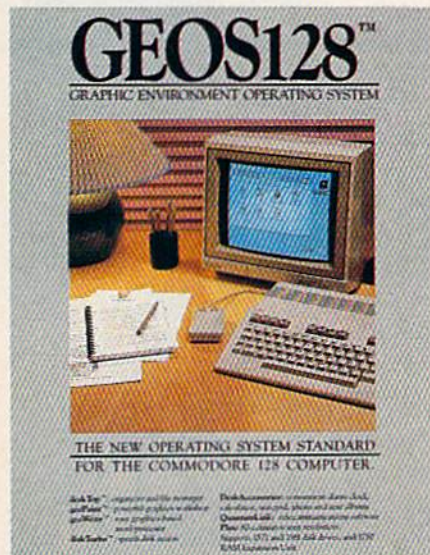
Of course, that's merely a sampling of what the GEOS environment has to offer. Because even as you read this, legions of our engineers are hard at work, developing even more GEOS applications for even more uses.

All of which means you get a whole lot more out of your Commodore than you ever bargained for. And while that may not actually keep your Commodore from getting older, that's certainly something it could live with for a long, long time.



**Berkeley
Software Works**

The brightest minds are working at Berkeley.

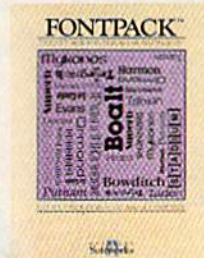


128 version features 128K memory, full 80 column screen, supports 1571/1581 disk drives, 1750 RAM expansion and runs at a full 2 MHz for lightning speed.



DESKPACK

NEW Six GEOS-compatible applications: Graphics Grabber for importing art from Print Shop, Newsroom™ and Print Master™ graphics; Calendar; Icon Editor and Black Jack Dealer. Now includes geoDex, the GEOS-compatible directory that allows you to create lists by name, address, phone number, and geoMerge to customize form letters and invitations. In either 40 or 80 col. mode.



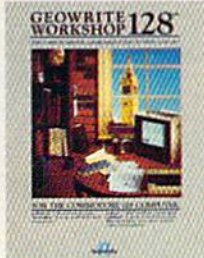
FONTPACK 2

NEW A collection of even more fonts for use with GEOS applications, in various shapes and sizes for more expressive and creative documents. Includes font editor. In either 40 or 80 column mode.



GEOFILE 128

NEW The GEOS-compatible database manager that sorts, edits and prioritizes whatever data you feed it. You fill out the "input form," specify your command, and geoFile takes it from there. 128 version features full 80 column screen. Due soon!



GEOWRITE WORKSHOP 128

NEW All the GEOS-compatible tools a writer needs, including geoWrite 2.1 with headers, footers, margins to 8" across and features to justify, center, search and replace text. Includes a Text Grabber (for converting text from programs like Paper Clip), geoMerge and LaserWriter printing capability. Features full 80 column screen.



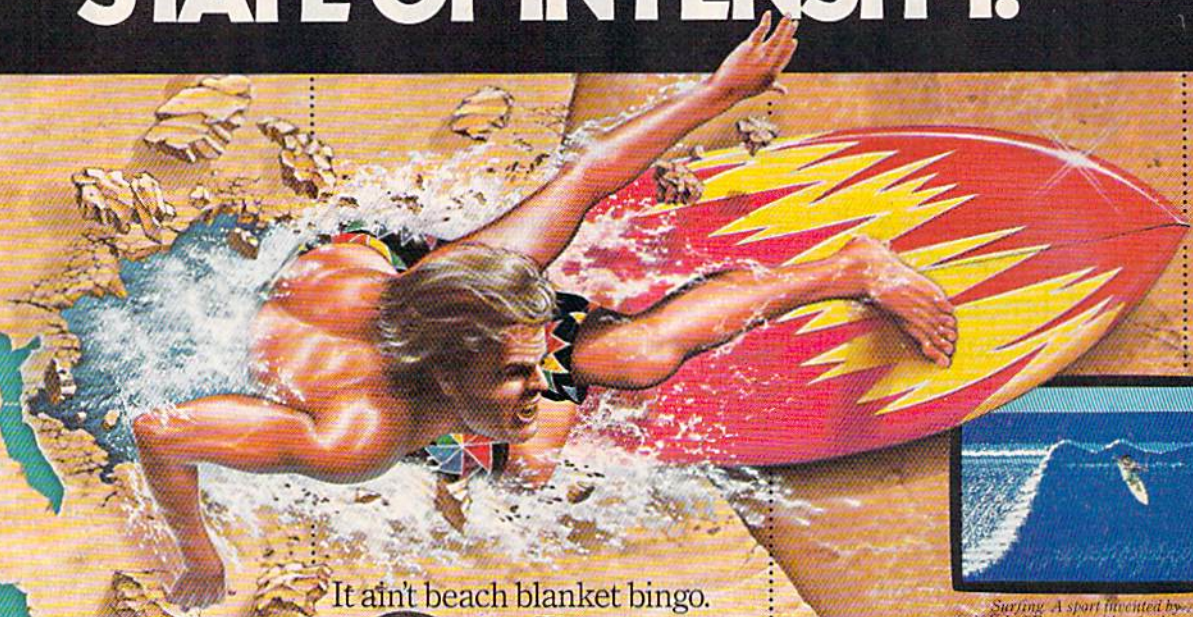
GEOCALC 128

NEW The GEOS-compatible, number-crunching spreadsheet for tracking and analyzing numerical data. Create your own formulas, perform calculations for anything from simple geometry to "what if" cost projections. 128 version features full 80 column screen. Due soon!

To order call
1-800-443-0100
ext. 234

Commodore, Commodore C64 and C128 are trademarks of Commodore Electronics, Ltd. GEOS, geoWrite, geoPaint, geoDictionary, geoMerge, geoWrite Workshop, geoCalc, geoFile, geoDex, DeskPack, FontPack 1, geoPublish, geoSpell, geoProgrammer, geoDebugger and Berkeley Software Works are trademarks of Berkeley Software Works.

CALIFORNIA GAMES.TM BRACE YOURSELF FOR A NEW STATE OF INTENSITY.



Surfing. A sport invented by half-baked Banzais with a fondness for ripping, grinding and shredding.

It ain't beach blanket bingo.

These are radical games. Games that take the honorable tradition of *Summer Games™ I and II*, *Winter Games™*, and *World Games™*, wax it down and load it on the roof.

Try shredding the face of a totally tubular wave. Join the airforce in a BMX bike race. Screech around on skates and then rocket off the skateboard ramp.

You'll be playing for sponsors like Ocean Pacific, NHS Santa Cruz, CASIO, Costa Del Mar, Kawasaki, and Spinjammer. For trophies and an overall championship.

So get air. Go crazy. Welcome to the state of California.

CALIFORNIA GAMES BY

EPYX[®]

Commodore 64/128, Apple II & Compatibles, IBM & Compatibles, Amiga

SEE GAME BOX FOR DETAILS ON INSTANT WINNER CONTEST.



BMX. Where wheelies are the breakfast of champions. And everyone else eats dirt.



Slalom the boardwalk obstacle course on roller skates.



Launch a few feet off the lip with your skateboard tucked high. And while you're up there, dance for the crowd.



COMPUTE!'s GAZETTE contents

March 1988 Vol. 6, No. 3

features

GEOS: Stretching the Boundaries—A Conversation with Brian Dougherty	Tom Netsel	9	*
Report from Toronto: The World of Commodore	Neil Randall	16	*
Super CP/M Software for the 128, Part 1: Writer's Toolbox	Clifton Karnes	20	*

reviews

Skate or Die	Tom Netsel	31	64
The Maxx-Out Series	Ervin Bobo	32	64
Force 7	Robert Bixby	34	64
Thunderchopper	Ervin Bobo	38	64
Commodore 1581 Disk Drive	Scott Thomas	42	128/64

games

Oil Defense	Mark H. Thomas	45	64
Human Rat Race	Roger Hughes	46	64

programming

Machine Language Programming: Managing Memory	Jim Butterfield	57	128/64
BASIC for Beginners: More on the Random Function	Larry Cotton	60	128/64/+4/16
Power BASIC: Color Lister	Bret M. Timmins	61	128/64/+4/16
ML Cloner	Joseph Charnetski	64	128/64/+4/16
Hi-Res Screen Dump for the Plus/4 and 16	James Host	65	+4/16
Big Screen	Robert Bixby	66	64
Sketch Pad Plus	Forrest Bentley	68	64
XpressCard 128	Robert Bixby	70	128
Basically Music	Greg Tarr	73	64

departments

The Editor's Notes	Lance Elko	6	*
User Group Update	Mickey McLean	30	*
Gazette Feedback	Editors and Readers	52	*
Simple Answers to Common Questions	Tom R. Halfhill	56	*
Computing for Families: The Secret Life of Fred D'Ignazio	Fred D'Ignazio	58	*
The GEOS Column: Directory Printer	Greg J. Badros	59	64
Horizons: The Software Police	Todd Heimarck	62	*
Bug-Swatter: Modifications and Corrections		64	*

program listings

How to Type In COMPUTE!'s Gazette Programs	102	*
The Automatic Proofreader	104	128/64/+4/16
MLX: Machine Language Entry Program for Commodore 64 and 128	106	128/64
Advertisers Index	116	*

*=General, 64=Commodore 64, +4=Plus/4, 16=Commodore 16, 128=Commodore 128

editor's notes

The news from Commodore is good: 1987 was a turnaround year. The startling losses incurred in 1986—\$127.9 million—were, to some, a portent of sure doom. But with all the numbers in for 1987, Commodore showed not only signs of recovery, but also of a return to health: a profit of \$28.6 million. And the first-quarter numbers for fiscal year 1988 (Commodore's fiscal year runs from July 1 to June 30) continue the trend. The quarter ending September 30 showed a profit of \$6.3 million.

Why? There are a number of reasons. While the Amiga 500 and 2000 had a moderately successful summer debut, and 128/64 sales have continued to remain strong, the most important factor in 1987's success was sales performance *outside* the U.S., where about 74 percent of the year's revenues were generated. (Of the non-U.S. markets, West Germany is the strongest.) The disappointing numbers in the American market were a major reason for the firing of Thomas Rattigan and the hiring last fall of new president Max Toy.

According to Irving Gould, Commodore's chairman of the board, "the normal standard for a truly international company is that the United States should represent 50 percent of the world in sales. We used to have 40 percent. In the last few years, that's gone down to somewhere between 20 and 25 percent. So, our concentration is going to be on recapturing the market share we lost in the U.S. That's why we appointed Max Toy to be president. His major task will be to lead the company toward our goal of recapturing our market share in the U.S."

Regaining the U.S. market share will be a stiff challenge for Toy in view of the inroads made into the PC market in recent years by Apple and IBM. However, Commodore watchers have been impressed by

Toy's market knowledge and business savvy in his tenure thus far. It's not surprising. Toy has more than 12 years of experience in the personal computer industry. He held top sales and marketing positions with ITT, Compaq, and IBM. Since his debut, Amiga U.S. sales have been brisk, and pre-Christmas reports put sales (worldwide) over the 500,000 mark. Commodore has been touting the Amiga in major news magazines and in TV spots, as well as running various promotions.

While the Commodore marketing crew has shown signs of an increasingly aggressive posture with the Amiga, they also realize that the venerable 64 has a potentially new market. In view of the surprising and resurgent interest in game machines—Nintendo, Sega, and the Atari 2600—they've been running TV ads on Saturday mornings to demonstrate that the 64 is a great game machine, and much more.

Irving Gould noted at the Toronto "World of Commodore" show held in December that if he had 50,000 Commodore 64s ready to ship, they'd be sold. He also commented that "we plan to continue the 64... it's selling very well. The 64 is such an old workhorse that we feel it has many years of good life left in it." Software developers seem to feel the same way: New titles are being released and planned on a regular basis.

As we move through 1988, we'll keep you up on new developments with Commodore, and we'll continue to provide you with the best coverage possible. Also, look for our Winter CES show report in next month's issue.

Lance Elko

Lance Elko
Editor

COMPUTE!'s GAZETTE

FOR COMMODORE PERSONAL COMPUTER USERS

Editor Lance Elko
Art Director Janice R. Fary
Features Editor Keith Ferrell
Programming Supervisor Patrick Parrish
Assistant Editors Rhett Anderson
Clifton Karnes
Randy Thompson
Assistant Technical Editor Dale McBane
Assistant Features Editor Tom Netsel
Submissions Reviewer David Hensley
Contributing Editors Tom Halfhill
Todd Heimarck
Jim Butterfield
(Toronto, Canada)
Fred D'Ignazio
(E. Lansing, MI)
Mickey McLean

EDITORIAL ASSISTANT

ART DEPARTMENT
Associate Art Director Lee Noel, Jr.
Mechanical Artists Scotty Billings
Robin Case
Kim Potts

PRODUCTION DEPARTMENT
Production Director Tony Roberts
Production Manager Irma Swain
Assistant Production Manager De Potter
Copy Editors Jill Champion
Karen Siepak
Lori Sonoski
Karen Uhlenborg
Typesetting Carole Dunton

BOOK DIVISION

Editor Stephen Levy
Designer Tony Jacobson
Assistant Editors Robert Bixby
Tammie Taylor
Lynne Weatherman
David Florance
Programming Assistant Terry Cash
Typesetting

COMPUTE! PUBLICATIONS

Group Vice-President, William Tynan
Publisher/Editorial Director Kathleen Martinek
Managing Editor Selby Bateman
Associate Publisher Sybil Agee
Administrative Staff Anita Armfield
Iris Brooks
Julia Fleming

ABC CONSUMER MAGAZINES

Senior Vice-President, Richard J. Marino
Advertising Group Vice-President, Barbara H. Marks
Circulation Vice-President, Operations Lucian A. Parziale
Vice-President, Finance Marc Reisch
Vice-President, Production Ilene Berson-Weiner

CIRCULATION DEPARTMENT

Vice-President, Circulation Robert I. Gursha
Circulation Subscription Staff Ora Blackman-DeBrown
Joseph DeFalco
Mitch Frank
Tom Link
James J. Smith
Customer Service Kay Harris
Single Copy Sales A. Heather Wood

ONE OF THE ABC PUBLISHING COMPANIES

President Robert G. Burton
1330 Avenue of the Americas
New York, NY 10019

ADVERTISING OFFICES

New York: ABC Consumer Magazines, Inc., 825 Seventh Ave., New York, NY 10019. Tel. (212) 265-8360. Peter T. Johnson, Group Advertising Director; Bernard J. Theobald, Jr., Advertising Director.
Greensboro: COMPUTE! Publications, Suite 200, 324 West Wendover Ave., Greensboro, NC 27408. Tel. (919) 275-9809. Kathleen Ingram, Advertising Production Coordinator.
New England & Mid-Atlantic: Bernard J. Theobald, Jr., (212) 315-1665; Peter Hardy (617) 681-9000.
Midwest & Southwest: Jerry Thompson, Lucille Dennis (312) 726-6047 (Chicago); (713) 731-2605 (Texas); (303) 595-9299 (Colorado); (415) 348-8222 (California).
West, Northwest, & British Columbia: Jerry Thompson, Lucille Dennis (415) 348-8222.
Southeast & International: Peter Hardy (617) 681-9000.

Editorial inquiries should be addressed to The Editor, COMPUTE!'s GAZETTE, Suite 200, 324 West Wendover Ave., Greensboro, NC 27408

PRINTED IN THE U.S.A.

MPA



Get Results

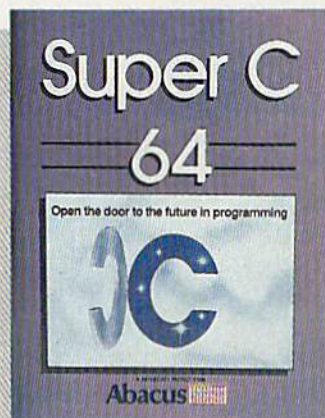
with proven software and books from Abacus.



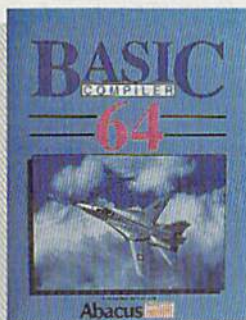
Super Pascal—Get the fastest and complete Pascal for your computer. **Super Pascal** is a full implementation of standard Pascal. Extensive editor features search, replace, etc. Even add machine language routines with the built-in assembler. Fast graphics library. C-64 version has high-speed DOS for faster access. More than just a compiler—**Super Pascal** is a complete system that gives you programming results.
C-64 \$59.95 C-128 \$59.95



Cadpak—The professional design tool. Enter simple or intricate drawings with the keyboard, lightpen or 1531 mouse. With the flexible object editor you can create libraries of furniture, electronics, etc. as intricate as screen resolution permits. Zoom in to do detailed work. Produce exact scaled output to most printers in inches, feet, etc. Get design results fast with **Cadpak** and your Commodore® computer.
C-64 \$39.95 C-128 \$59.95

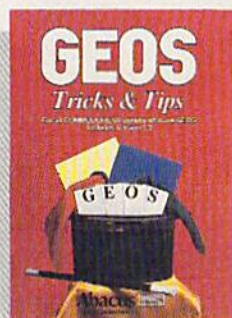


Super C—You can now develop software or just learn C on your computer. Easy-to-use and takes full advantage of this versatile language. Produces 6502 machine code and is many times faster than BASIC. Includes full-screen editor (search, replace and block operations), compiler, linker and handbook. Libraries for graphics and advanced math are included. Whether you want to learn C, or program in a serious C environment for your Commodore, **Super C** is the one to buy.
C-64 \$59.95 C-128 \$59.95



BASIC Compiler—Now anyone can make their BASIC programs run faster! Easily converts your programs into fast machine language or speed code. Even speed up programs written in Simon's Basic, Video Basic etc. If your program walks or crawls, give it speed to RUN!
C64 \$39.95 C128 \$59.95

New!



GEOS™ Tricks & Tips—A new book with something for everyone. Contains over 50 tricks and tips that you can use everyday. Converts any word processor file into geoWrite format; edit existing GEOS fonts or create your own; Write in machine language or explore the internals of GEOS. \$16.95

Please note our new address and phone numbers

Abacus

Dept. G1 • 5370 52nd Street SE • Grand Rapids, MI 49508
Phone 616/698-0330 • Telex 709-101 • Telefax 616/698-0325
Call or write today for your **free** catalog or the name of your nearest dealer. Or you can order direct using your Visa, American Express or MasterCard. Add \$4.00 per order for shipping and handling. Foreign orders add \$12.00 per item. 30-day money back guarantee on software. Dealer inquiries welcome—over 2400 dealers nationwide.



TextPro Amiga is a full-function word processing package. Easy-to-use, fast and powerful—with a surprising number of extras. \$79.95

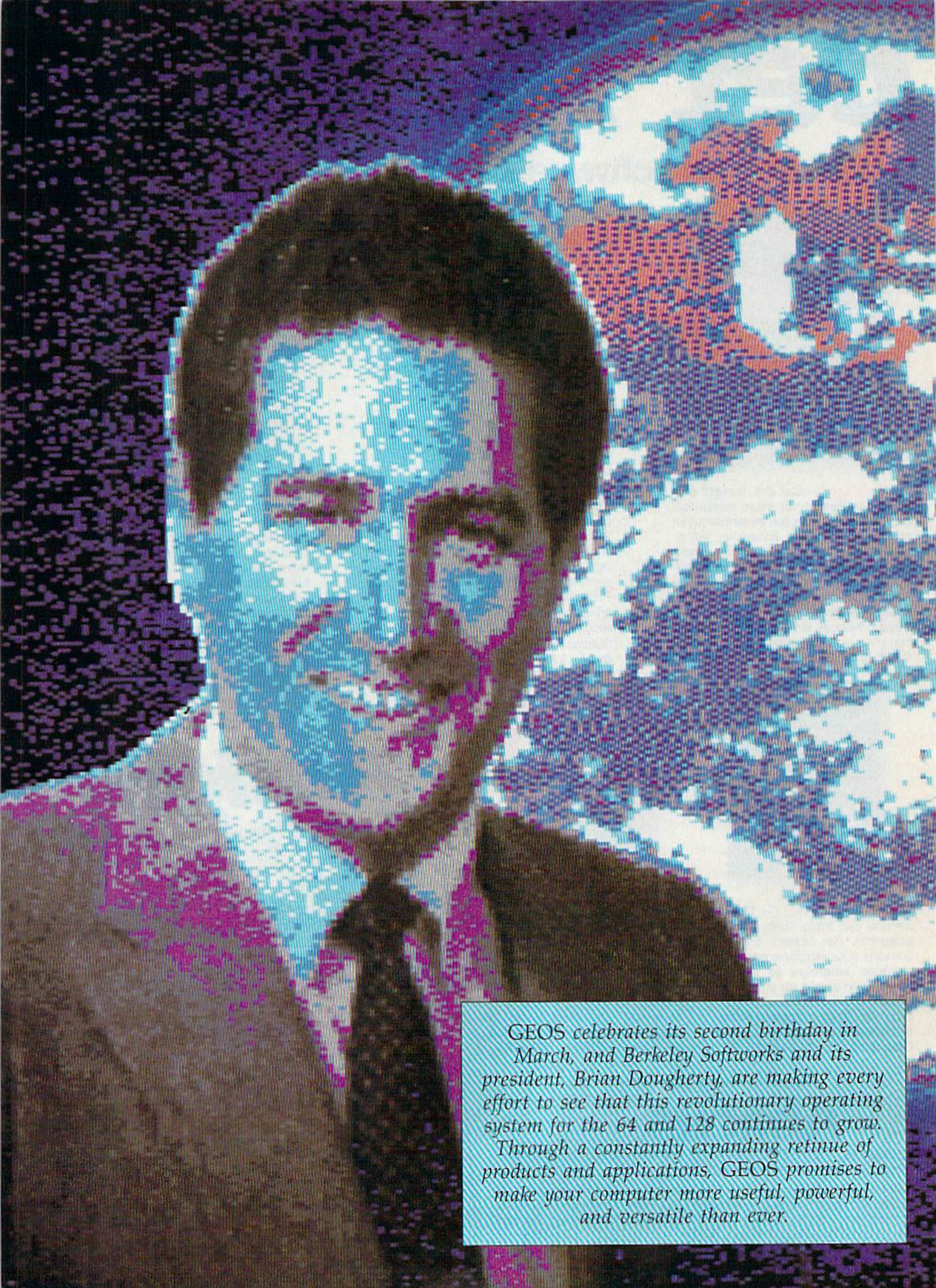
BeckerText Amiga is the professional word processor. WYSIWYG formatting. Automatic creation of table of contents and index. Expandable spelling checker. Merge graphics into text. Much more. \$150.00

DataRetrieve Amiga is the powerful, and easy-to-use database. Sets up in minutes. Password security. Large capacity. Performs complex searches. Very flexible. \$79.95

AssemPro Amiga unlocks the full power of the Amiga's 68000 processor. Integrated Editor, Debugger, Disassembler and Reassembler. Cross-reference list. Conditional assembly. \$99.95

Call (616) 698-0330 or write for your free Amiga software and book catalog. More software and books coming soon!

Commodore is a registered trademark of Commodore Electronics Ltd.
Amiga is a registered trademark of Commodore-Amiga, Inc.
GEOS is a trademark of Berkeley Softworks.



GEOS celebrates its second birthday in March, and Berkeley Softworks and its president, Brian Dougherty, are making every effort to see that this revolutionary operating system for the 64 and 128 continues to grow. Through a constantly expanding retinue of products and applications, GEOS promises to make your computer more useful, powerful, and versatile than ever.

GEOS

Stretching The Boundaries

A Conversation With Brian Dougherty

Tom Netsel, Assistant Features Editor

In 1986, Berkeley Softworks introduced *GEOS (Graphic Environment Operating System)* for the 64. This powerful, graphics-based interface uses icons, windows, and pull-down menus to turn the 64—and now the 128—into a user-friendly system similar to the Apple Macintosh. *GEOS* attracted a lot of interest from the first, and its legitimacy was further enhanced by Commodore's decision to bundle *GEOS* with all 64C computers. As 700,000 *GEOS* users know, Berkeley didn't stop at the interface.

GEOS isn't static. It's a changing and expanding environment that was never meant to be a stand-alone system. Berkeley continues to add refinements and updates to *geoWrite* and *geoPaint*, its original word processing and drawing programs, and to develop new tools and programs that share data between system applications. In this interview, Brian Dougherty, president of Berkeley Softworks, discusses some of the changes seen in the past two years and what the future may have in store for the expanding universe of *GEOS*.

GAZETTE: In the first year of its release, *GEOS* sales were estimated at 450,000. What size is the base today?

Dougherty: We're at about 200,000 in sales from ourselves, and we expect Commodore's sales are well over half a million total 64s with *GEOS* installed.

GAZETTE: *GEOS* is now in version 1.3. Do you expect any more refinements or improvements?

Dougherty: There are improvements. We think we have all the bugs out, but we're adding additional capabilities. For example, a 1.4 version that will probably be released in early '88 will have additional support for things like the Commodore 1581 [3½-inch] drive. It has features that will take more advantage of the RAM expansion units and add just a couple of general improvements to the desktop.

We're constantly working on refining the operating system and the whole user interface to the operating system. We have to put enough improvements together

into a package to make it worthwhile to go through a whole upgrade. There's a fair amount involved in going through an upgrade phase. We need to change the inventory in the field as well as contact all of our registered owners to give them the upgrade software.

GAZETTE: When a new version comes out, do you contact all the registered *GEOS* owners?

Dougherty: We have a pretty substantial mailing list of *GEOS* owners who have sent in their registration cards, and we send out a flier to them letting them know they can upgrade. For example, when we came out with the 128 version, all the 64 owners who indicated they own a 128 were sent a brochure telling them about the 128 *GEOS* and that they could upgrade for... I think it was \$22, or something like that.

GAZETTE: How does *GEOS* for the 128 differ from the 64 version? Does it take advantage of the 80-column screen and the larger memory?

Dougherty: Exactly. There are a

We're constantly working on refining the operating system. . . .

couple of things it can do with more memory. For example, one of the problems we had with the 64 version was with people not understanding the concept of printer drivers. You had to have a printer driver on a disk that you wanted to print from. We got rid of that whole problem with the 128 version because there's enough memory to keep the selected printer driver memory-resident.

The big features that 128 owners benefited from were having 80-column support and taking advantage of the 1571 hardware protocol for transferring data from the disk—which made disk transfers even faster. I think those were the most notable improvements.

GAZETTE: What other after-sale support does Berkeley offer GEOS owners?

Dougherty: We do a substantial amount of customer service on QuantumLink [a Commodore-specific telecommunications service]. We run bulletin boards on Q-Link for every one of the products we have. We really prefer to handle customer service problems through Q-Link. At the price we sell our software—anywhere from \$29 and \$69—we really can't afford to have 20 or 50 people in customer service answering the phones. It's hard to handle all the customer service problems that are generated when you sell 200,000 units from a phone-call point of view.

If you look at companies that do have extensive customer service, they typically have more expensive packages. For example, *WordPerfect* has 113 people answering the phones, but when you charge more than \$450 for a product, you can afford to do that. We do have a phone line, and we're adding more people to the customer service phone support, but there's no way we can do a cost-effective job with the number of users we have just by phone support. So with Q-Link we have a

very efficient way of handling customer service.

GAZETTE: When people call Berkeley on the hotline, what question do they ask most frequently?

Dougherty: There are 10 or 20 questions that account for most of our customer service problems. They're usually printer problems or printer interface problems because there are so many different printers. We're now up to something like 30 different printer drivers, and each one will support several printers. So we have support for something like 75 to 100 different printers.

With that number of printers, people finding and selecting the correct printer driver to work with their printer is probably the most common problem. If somebody says he has a such-and-such printer, which may not be listed in our manual but does work with one of our printer drivers, that question might get asked over and over again on the phone line, but you only need to answer it once on QuantumLink. Somebody can look through the bulletin board and say, "Oh, yeah, here's somebody else that had the same problem I did, and here's the solution."

GAZETTE: In addition to having their questions answered, what are some of the GEOS programs people can download from QuantumLink?

Dougherty: We have upgrades and patches. For example, our *geoDex* and our *Graphics Grabber* program both had small bugs in them that we found out about after the products were released. They were very simple problems to fix, just something like an uninitialized variable. So via QuantumLink, we were able to download a patch program. You could download it and then run it, and it would fix the bug in your *geoDex* or *Graphics Grabber* program.

We also have LaserWriter screen equivalents for fonts you can download if you want to use the

Quantum Laser Writing service [a service offered by Berkeley for GEOS users who want to have material laser printed and sent back to them]. You can get screen equivalents for LaserWriter Times, Roman, and Helvetica fonts.

Even though the box says 1.2, since January 1987 we've been shipping the 1.3 version of the deskTop. But if you have the 1.2 software, you can get the 1.3 deskTop downloaded to you. There are a number of programs like that. There are also some little utility programs that have been done under GEOS that we've made available to the public domain.

GAZETTE: You released a number of applications during the past year, including *Deskpak 1*, *geoDex*, and *Fontpak 1*. Do you plan updates for any of these?

Dougherty: Actually, by the time this article is breaking, we'll be coming out with a combination pack that combines *geoDex* and the *Deskpak* software into one disk. It'll be a new *Deskpak*, and that version of *Deskpak* will work both with 64

We run bulletin boards on Q-Link for every one of the products we have.

and 128 software. So if you're running a 128 in 80-column mode, the desk accessory will automatically check for that and come up in 80-column. Or if you're running a 64, or a 128 in 64 mode or even 128 mode but in 40 columns, the desk accessory will sense which operating system you're running and come up in 40- or 80-column mode. We're also coming out with a *Fontpak 2* that will have just an enormous number of additional fonts. Both sides of a disk will be filled with interesting fonts for use with any application.

GAZETTE: What are you planning for *Writer's Workshop* or *geoPublish*? I know you took *geoWrite* and upgraded it to a 2.0 version for release with *Writer's Workshop*.

WORK WITH US ON A PROFESSIONAL LEVEL.

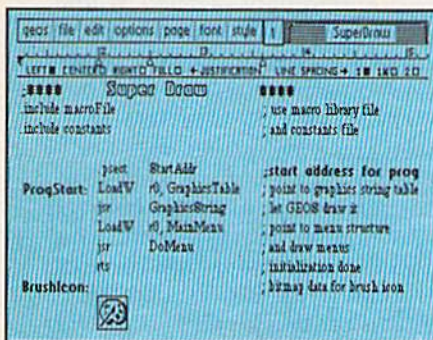
Some people really like working on their machines. And then there are some who prefer to do their tinkering under the hood. For those of you who can't wait to get your hands greasy, we proudly introduce geoProgrammer. The most sophisticated machine language programming tool on the market.

With geoProgrammer, you get the same kind of technology we use for developing our other products. Which means you can write supercharged software. Pump your own programs. And assemble just about any kind of application you can imagine.

It reads and writes and stomps on bugs.

The first three tools that any serious programmer needs are an assembler, a linker and a debugger. So we've installed all three, complete with sample GEOS applications that teach you the latest programming tricks in seconds.

geoAssembler not only reads directly from geoWrite files, but contains enough Pseudo Ops to



*Also available for 80 col. C128's.

allow all kinds of conditional assemblies. It has all the state-of-the-art features you'd expect, including some you probably never thought possible. For example, integrating graphics is as simple as cutting and pasting the image from geoPaint directly into your program.

geoLinker ties your program modules together, supporting GEOS SEQ and VLIR applications and desk accessories. You can even use geoAssembler and geoLinker to create non-GEOS applications.



geoDebugger allows your program to be tested in memory with full symbolic disassembly, along with line assembly for patching code in memory. It also allows your code to be single-stepped or top-stepped, with sub-routines fully executed. It can stop a running program with one key, or use up to eight conditional breakpoints. When your program hits the breakpoint, it prominently displays the error in an overlay window, leaving the applications screen intact.

Pro enough for you yet? Well, that's only a *partial* list of what you're in for.

If you understood all that, read on.

Chances are that we lost a lot of readers by now. But if you're still with us, hang in there. You have the makings of a real GEOS pro. All you need now are the right tools.

And all of them come in this one handy box.

So if you're serious about programming, consider geoProgrammer. After all, you've got nothing to lose — except your amateur status.

To order call 1-800-443-0100 ext. 234

geoProgrammer \$69.95

(California residents add 7% sales tax.)

\$2.50 US/\$5.50 Foreign for shipping and handling. Allow six weeks for delivery.

Commodore, Commodore 64 and C128 are trademarks of Commodore Electronics, Ltd. GEOS, geoProgrammer and Berkeley Softworks are trademarks of Berkeley Softworks.

GEOPROGRAMMER



**Berkeley
Softworks**

The brightest minds are working at Berkeley.



Dougherty: We changed the name of *Writer's Workshop* to *geoWrite Workshop*, and that package should be well into distribution by the time this article appears. It has 2.1 *geoWrite* in it.

GAZETTE: What are some of its features?

Dougherty: The main addition to the 2.1 *geoWrite* is the ability to make a full screen-wide page. With *Writer's Workshop* up to this point and *geoWrite* 1.3 that came with *GEOS*, the maximum you could move the margins out were to within an inch of either edge of the page. But with the 2.1 version, you can actually go out to the edge of the page. You have a full eight inches viewable on the screen.

There have been a couple of other speed improvements, but that will be the most notable improvement to *Writer's Workshop*. And *geoPublish* will be coming out in a 128 version. Those are really the two major products for us right now. The 128 version should be out in the first quarter of '88.

GAZETTE: What's the status of *geoBASIC*? Is it still in the works?

Dougherty: Yes, in fact it should be released in February. From first talking about it, we've since gone back and asked, "What do we really want from this product?" We've really added a lot of extensive features to it, in addition to being a basic little support-all of the *GEOS* operating system calls.

There are all sorts of tools in it for constructing dialog boxes and menu structures for use in the *GEOS* environment, as well as a complete icon-based authoring tool. You could actually do an icon-based programming of BASIC programs. The idea is that people can develop modules that do very powerful things that they can provide to less-sophisticated programmers. And that whole module might be represented by a single icon.

It will allow people who don't have very much of a programming background to get into programming simply by stringing a few icons together that'll do some very global functions. It'll come out in a package whose working name right now is *geoPAT*, which stands for *Program Authoring Tool*. It will con-

**We think *geoBASIC* will be a terrific product
for the education market.**

tain both *geoBASIC* and this icon interface to *geoBASIC*. We think it will be a terrific product for the education market.

GAZETTE: Speaking of education, I've heard you're planning something called *geoNet* that can link a number of computers together.

Dougherty: Yes, last summer we demonstrated the first version of *geoNet*, networking IBM PCs and 64s together. It allowed another PC with a hard disk to be used as a file-server for up to thirty-two 64s that would be on this low-cost, local area network. Basically, it combined a ramdisk and the network hardware on a single card that could be plugged into the 64. But we've decided not to release that product until we come out with the Apple II version.

Since there's such a large installed base of Apple IIs in the school market, we figured that the right time to introduce the product was when we could go into schools that have Apple IIs, or a combination of Apples and Commodores, and allow everybody to communicate together. This is going to dovetail right around the end of January, because in February we'll introduce *GEOS* for the Apple II.

geoNet will come out shortly after that. It will allow Apple IIs and 64s to not only communicate over the *geoNet* network, but also actually share files, because the *GEOS* files will have the same file format on both the Apple and the Commodore. So if you take, for example, a *geoWrite* document on your Commodore and send it over the net to an Apple, a person using the Apple computer will be able to instantly read that file and add comments to it or do anything he or she wants with it. It's going to be a pretty exciting opportunity for us.

GAZETTE: Will *GEOS* for the Apple differ significantly from the 64 version?

Dougherty: There are a number of differences. *GEOS* for the Apple uses the basic ProDOS file structure, which is a hierarchical directory structure. So, while the deskTop looks very similar, there's the ability to make and change directories and a number of other features like that on the Apple version.

Then there are the applications. For example, on the 64, if you want to select a file from a different application, the dialog box comes up and lets you either switch disks or list all the files of that application. On the Apple version, since there's a hierarchical directory structure, it also gives you the option of changing to another directory to look for a file. There are a few subtle changes like that, but on the whole it'll look almost identical. People working on *GEOS* in the Apple environment or in the Commodore environment will have no problem switching between the two.

GAZETTE: A few companies have released applications for *GEOS*, but what's Berkeley doing to promote third-party support?

Dougherty: We have a technical special interest group on Quantum-Link, and there are a number of developers we've spoken with who are doing *GEOS* applications. We've just released a product—one that will be of enormous benefit to third-party developers working on *GEOS* applications—called *geoProgrammer*. This is a very sophisticated assembly language development environment for *GEOS*.

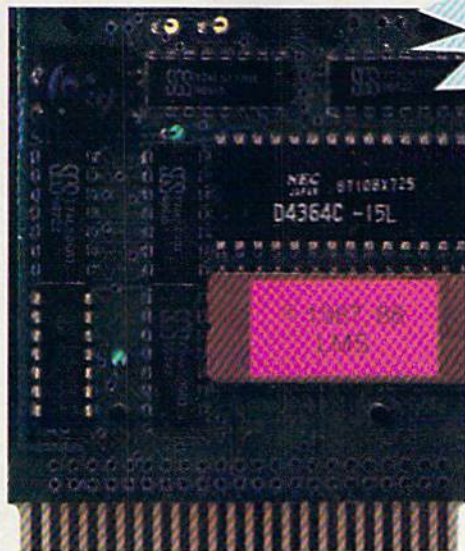
It consists of an assembler, a linker, and a complete symbolic debugger. If you're using RAM expansion, you're able to toggle between the symbolic debugger and your *GEOS* display screen. You can look at routines running in memory or you can set break points—all with symbolic labels exactly as they would appear in your listing. You can use any word processor you

SUPERIOR TECHNOLOGY LOOKS LIKE

NEW!! V3.0

THIS

STILL
ONLY
\$54.95



SUPER SNAPSHOT V3.0

The best just got better!

"All in all, I think this is the best of the bunch"

- Tim Sickbert, INFO, Jan. '88

"It's memory dumper function is probably the most advanced on the market at this time...overall we were very pleased."

- Morton Kevelson, AHOY!, Nov. '87

★★★★★ Read SUPER SNAPSHOT's 4 STAR review in INFO magazine (Jan. '88) "B+"... RUN, Dec. '87

To offer the most powerful utilities you must first have state of the art hardware. This is a fact that our competitor doesn't understand, which explains why they are offering their latest 'final' version based on the old style, ROM only, hardware. SUPER SNAPSHOT is the ONLY utility cartridge that incorporates a RAM chip AS WELL AS a large ROM. This is just one of the reasons why RUN magazine gave SUPER SNAPSHOT a "B+" rating (Dec. '87) while our competitor received only a "B" (Sept. '87). And INFO magazine gave SUPER SNAPSHOT a ★★★★★ rating while our competitor received only ★★★ (Jan. '88).

Compare these features found on SUPER SNAPSHOT V3.0 to those found on rival products: • TURBO DOS (actually three systems in one) fast LOAD and SAVE to the 1541, 1571 (in 1541 OR 1571 mode) or 1581 • Full-featured DOS wedge (supports multiple drives) • Pre-programmed function keys • The most advanced machine language monitor available for the 64. Includes all standard commands plus scrolling, bankswitching, IO modify, ability to interrupt a running program, examine it and then SUCCESSFULLY resume.

- Screen dumper that dumps ALL screens, three different size options, to PRINTER OR to DISK (in KOALA or DOODLE! format) • Fast format
 - Fast file copier, 1 or 2 drive, supports the 1541, 1571 and 1581 ... any combination • Fast disk copier, 1 or 2 drive, supports the 1541, 1571 and 1581 • GAME MASTER SCREEN - built in sprite killer and EXTENDED LIFE mode (one of the benefits of having a RAM)
 - TURBO*25 - loads any program saved with TURBO*25 at blinding speed (50 K in 5 seconds). Works with any drive. Simple to use... no user intervention required
 - Completely WINDOW driven with easy to read screen windows that are available any time, NOT just at power-up • FREE Kracker Jax parameter disk which contains a nibbler and 80 parameters for backing up those programs that can't be done with ANY cartridge. ALL this and more!
- SUPER SNAPSHOT's unique design allows updating to new versions when they become available with simple, affordable, plug-in ROMs. No need to ever buy another complete cartridge. And SUPER SNAPSHOT is \$15-\$20 less in price to begin with.

Super Snapshot Slideshow Creator

This is HOT! You know that Super Snapshot can capture a multicolor or hi res display on your screen and save it to disk as a "file." Our new Slideshow Creator lets you display a series of these images, with dynamic options such as fade in and out, shutter on or off and pop on and off, and your choice of 10 different fonts for creating your own custom scrolling captions! We've even included programming to allow you to easily integrate hi res or multicolor screens into your own M/L or BASIC programs with full control! Only \$14.95 U.S., \$19.95 CDN.

ORDER IT WITH SUPER SNAPSHOT V3.0 AND RECEIVE \$5 OFF

RIVAL CLAIMS... FLASHY ADS... WHO'S KIDDING WHO? YOU DECIDE! Both we and our competitor offer a 10 DAY, MONEY-BACK GUARANTEE. So buy them both, try them out and send back the one you don't want. YOU decide who is offering gimmicks and who is offering solid, well designed utilities. But act quickly - we expect our competitor will retract their offer when they see this ad.

SOFTWARE
SUPPORT
INTERNATIONAL

DEALER
INQUIRIES
WELCOME



CHECKS, MONEY ORDERS OR VISA/MASTERCARD/DISCOVER: Mail orders to:
Software Support International, 2700 NE Andresen Road, Vancouver, WA 98661

Phone orders welcome: (206) 695-1393 • Same day shipping. No C.O.D. orders outside U.S.
PLEASE NOTE: Free shipping & handling on all orders. • C.O.D. ADD \$4.00 to total order. • All orders must be paid in U.S. funds.
Washington residents add 7.30% sales tax to order. Orders outside of North America add \$7.50 for shipping.
In Canada, order from: Marshview Software, PO Box 1212, Sackville NB E0A-3C0. Only \$69.95 CDN.

The Expanding GEOS Environment

The GEOS world continues to grow. Commodore includes GEOS with every new 64C, and has dubbed the powerful software program the "official operating system for the 64." In just over two years, GEOS has grown into a complex network of products designed to enhance your computing experience. Here's a look at some of those products, most of which are in separate versions for the 128.

GEOS

The *Graphic Environment Operating System* comes on two double-sided disks and includes the GEOS Kernel and the *deskTop*, which convert the character-based operating system of the 64 and the 128 into one based on graphics. View files as icons and open, copy, delete, or sort them with a click of a mouse or joystick. Major applications include *geoWrite*, a word processor that offers 80-column text in a variety of fonts; and *geoPaint*, a full-featured drawing program and graphics editor. Other features include a built-in calculator, notepad, and alarm clock; enough printer drivers to support a multitude of printers; and a terminal program for QuantumLink, the Commodore-specific bulletin board service.

geoCalc

A spreadsheet for a variety of financial analysis needs—cost estimation, budget analysis, mortgage calculations, tax planning, or generating general financial statements. It provides basic arithmetic function to 12 places of accuracy in each of its 112 rows X 256 columns. It offers 9 places of accuracy for advanced functions, such as trigonometry, exponents, and logarithms.

geoFile

The GEOS-based data filing system in which information is organized and stored in "forms" that you design any way you want on the screen. After creating the form, simply fill in the blanks. Includes automatic sorting, keyword search command, and other powerful features.

geoWrite Workshop

A word processing package that features *geoWrite 2.1*. Features include full justification, line centering and spacing options, search and replace, header and footer options, plus LaserWriter support. It also includes *Text Grabber*, a program that converts files from other word processing programs into *geoWrite* format, and *geoMerge*, a mail merge program that generates form letters from *geoWrite* documents.

geoPublish

This desktop publishing program helps produce multiple-page, multiple-column documents, such as newsletters. It allows text and graphics to be mixed for creation of page layouts. Once a page is defined, text or graphics may be added or deleted without reformatting. Other features include automatic text adjustments, onscreen graphics tool box, and graphics placement.

geoProgrammer

This machine language programming tool provides the serious programmer with an assembler, a linker, and a debugger. The *geoAssembler* reads directly from *geoWrite* files and contains enough pseudo ops to allow a variety of conditional assemblies. Graphics can be cut and pasted directly from *geoPaint*; *geoLinker* ties program modules together and can be used with *geoAssembler* to create non-GEOS applications; and *geoDebugger* tests programs in memory with full symbolic disassembly, along with line assembly for patching code in memory.

Desk Pack

This revamped package contains four desk accessories and two applications to further enhance and refine your computing experience. *Graphics Grabber* transports clip art from other programs for use in the GEOS environment. An icon editor personalizes existing icons or creates originals. It also contains a calendar and appointment secretary to help organize schedules, and *Blackjack*, an authentic simulation of the card game. An electronic card filer, *geoDex*, stores names, addresses, phone numbers, and related information; *geoMerge* helps eliminate many repetitive tasks by merging data files created by *geoDex*.

geoNet

A low-cost local-area network designed for the educational market, *geoNet* allows 64, 128, Apple IIe, and IIc computers to be networked with an IBM PC, using the PC as a file and print server. Each student's workstation consists of a 64, 128, IIe, or IIc, and a *geoNet* interface card. Each interface card contains 512K ramdisk, network I/O card, and firmware to allow booting of the network. Files can be transferred to and from the PC, which is used as the teacher's workstation, with any student's workstation.

geoBASIC

A BASIC programming language that contains extensions for drawing and creating graphics. Contains a construction tool for creating menus, dialog boxes, and icon structures, which may be referenced by the *geoBASIC* program. Icons representing BASIC statements may be used, and a graph may be created showing program flow, with icons representing each step in the program.

Font Pack 2

This package contains 43 new fonts plus 10 of the most popular fonts from the discontinued *Font Pack 1*. It's designed for use with *geoPaint* and *geoWrite* to customize newsletters, reports, and fliers.

We've just released a product (geoProgrammer) that will be of enormous benefit to third-party developers working on GEOS applications.

want to create source files, but then you'd have to use *Text Grabber* to import them into *geoWrite*.

One of the powerful features of the development environment is that if you have graphics that you need to put in your program, like icon definitions, instead of having to develop the hex byte-pattern for the graphics, you can actually paste a picture into your source listing. The assembler will recognize that and generate the bytes in the object code. So it's a very powerful assembly language development environment for professional developers. We think that will make it a lot easier for third parties to develop GEOS applications.

We're also working on an improved programmer's reference manual. It will also have a section in it to cover porting programs between Commodore and Apple versions. We think that will be a big incentive for people to start supporting the GEOS environment.

A lot of people develop products for both Commodore and the Apple, and usually that means a complete rewrite to write a version for the other. But with GEOS support, since you're going through operating system calls for drawing graphics to the screen, a very minimum amount of programming is necessary. For example, here we're porting products developed for the

Commodore environment to the Apple environment in as little as two weeks.

GAZETTE: How about looking into your crystal ball and tell me what you see for GEOS in the future.

Dougherty: Well, the things we're willing to talk about now, we've pretty much covered. Things that are just coming onto the market now, like *Publish* and *Programmer*, and things that'll be on the market when this article appears, like *geoBASIC* and the Apple version of *GEOS*. And now there will be a tie between Commodore and Apple developers. That's a lot!

We do have other things that we're working on, but if something is more than three or four months away, we tend to keep it secret. I guess the one thing we're working on I can say is that we will have 128 versions for all of our major applications. So *geoCalc* and *geoFile* will have 128 versions probably around January, in addition to the 128 version of *geoPublish*.

Scenery Disk # 11

Explore the Great Lakes

from Detroit to

Buffalo with

Scenery Disk # 11

Fly the fine

Flight Simulator

Products of

SubLOGIC



subLOGIC
Corporation
713 Edgebrook Drive
Champaign IL 61820
(217) 359-8482 Telex: 206995
ORDER LINE: (800) 637-4983
(except in Illinois)

Report From Toronto:

The World Of Commodore

Neil Randall

While the Amiga drew its share of attention at this winter Commodore show, a host of significant new products for 64 and 128 owners was introduced. Here's a first-hand look at some new hardware and software.

December in Toronto.

The first covering of snow, the first collapse of the Maple Leafs, the start of the long wait for the return of the Blue Jays.

And for thousands of computer hobbyists, December in Toronto means the World of Commodore.

Since 1983, when the Commodore 64 was still the new kid in town, Commodore Canada has sponsored this all-Commodore exhibition. This year saw over 85 booths, including those sponsored by retailers and user groups, heavy hardware and software discounting, and—most importantly—demonstrations of new and recently introduced products.

For the first time, though, the 64 was not the star. In the past it has dominated the show, even after the introduction of the 128, even last year when the Amiga was on the rise. But this year the Amiga seemed to take over, with demonstrations of its new and glamorous software flashing from monitor after monitor. Even so, and despite grumbling from some quarters, 64/128 owners were anything but ignored, as seminars, stage shows, and new products kept their interest alive.

Productivity And Applications

Berkeley Softworks demonstrated its GEOS line, with *GeoFiler 128*, *GeoPublish 64*, and *GeoProgrammer 64* taking center stage. *GeoPublish* is a desktop publishing package for the 64 (to be released later for 128), featuring Berkeley's usual friendly interface and both simple and advanced features. Within the 64's limits, and the limits of the user's printer, the program produces very good copy and seems especially well-suited for classroom use.

GeoProgrammer (again for later 128 release) combines *geo-Assembler*, *geoLinker*, and *geo-Debugger* to provide a solid programming environment for serious GEOS users. According to Dana

Gale of Berkeley, *GeoProgrammer* will also appeal to regular GEOS users who are beginning to feel confident about producing their own software, tailored to their own needs.

The success of the GEOS system depends on not only Berkeley's support, but also on third-party support. To this end, CDA (Yreka, CA) has announced *Neofont*, a collection of 23 font styles in four different point sizes. The fonts are usable on all applicable GEOS packages.

Supporting GEOS as well was *BeckerBASIC*, a new programming package from Abacus (Grand Rapids, MI). Designed for users of BASIC, this program allows you to create GEOS applications. It includes over 270 commands, with 10

for cursor control, 20 for drawing, 35 for sprite animation, and nearly 20 for sound. The program also lets you construct pull-down menus and dialog boxes.

Also from CDA for the 64/128 comes *The Graphics Transformer*, an extremely handy device that lets you convert graphics pictures to the format of other graphics programs. This package allows you to create graphics with the drawing package of your choice and then move them to programs perhaps more useful for enhancement or printing.

Electronic Arts announced more new 64/128 packages than any other publisher. Among productivity programs, soon to be released are *Paperclip III* and *Outrageous Pages* (from their Batteries Included line). Already out is *Mavis Beacon Teaches Typing* (from the Software Toolworks line). *Outrageous Pages* promises to provide competition for *GeoPublish*, as well as Timeworks' new *Desktop Publisher*, with powerful graphics tools, the ability to flow text around graphics, and several templates and clip-art selections. *Paperclip III* takes the popular word processor a step farther with a telecommunications module, expanded spelling checker, and support for a ramdisk. *Mavis Beacon Teaches Typing* is a typing tutor with a difference: The fictional Mavis guides you through the lessons, in as friendly a manner

Make Any Computer Do Exactly What You Want With McGraw-Hill's

Contemporary Programming & Software Design Series

From Writing Your Own Programs to Modifying Existing Software, Here's the New, Easy, and Low Cost Way to Unlock the Secrets of Your Computer

Whether you use computers for business, for personal applications, or for fun, off-the-shelf programs will never do everything you want them to do for you. That's because they were written by programmers to satisfy what they perceived as the needs of the greatest number of potential users—often missing some or many of your specific needs.

That's why McGraw-Hill's new Contemporary Programming and Software Design Series teaches you how to create your own software... either from scratch or by making key modifications to existing programs.

There is nothing magical about it. You learn the process of building a computer program step-by-step with McGraw-Hill *Concept Modules* sent to you one at a time, once a month. Each of the ten modules in the Series takes you through an important step in the development of the structure and detailed logic of a program, including testing, debugging, and documentation.

Unique Interactive Hands-On Instruction

Each module includes an easy-to-understand guide PLUS a 5¼" floppy disk containing typical programs and interactive instruction that you can run on Commodore 64 and 128 computers, IBM PCs and PC compatibles for hands-on experience.

In the first Module, for example, when your sample program (Declining Interest Loans) appears on your screen, you'll find errors on certain program lines. You'll also see that the program is only three-quarters completed.

Now comes the fun part. You'll discover how this program is built, and in the process you'll learn how to identify and correct errors. And by the end of Module 1, you'll actually have completed this program yourself.

But there's more. Special graphics on your screen work in conjunction with the accompanying guide to amplify, illustrate, and deepen your understanding of software design principles.

The Crucial 95%—Learn the Foundation of Computer Programming

While the Series includes interactive disks that run on specific computers, everything you learn you can apply to any language or machine. Why is this possible? Because McGraw-Hill knows programming is far more than coding a program into the computer using a specific language. In the real world of computers, 95% of the programming process is carried out using design techniques that are independent of specific language or machine. It is this crucial 95% that you thoroughly understand and master in the Series.

Make no mistake. Almost all books and courses on "programming" teach you only the final 5% of the total programming process—namely, how to code in a specific language... information of little value if you don't know how to reach the point in the programming process when you are ready to code.

With the Series, however, you'll learn to create your own programs from scratch, even modify off-the-shelf programs. You'll learn enough BASIC and machine language to get you started on the remaining 5% of the programming process.

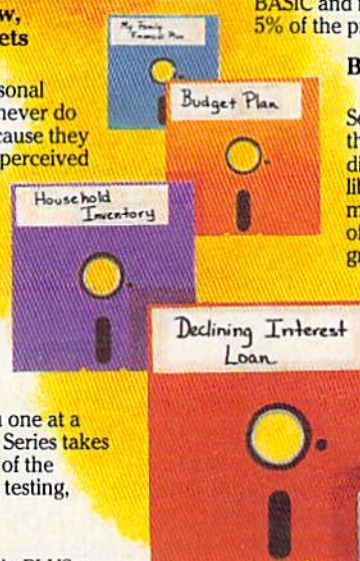
Build Your Own Personal Software Library

The sample programs you work with throughout the Series are excellent learning tools. But they're more than that. By combining the sample programs onto one master disk, you'll have the start of your own personal software library. In addition to the programs you've written and modified throughout the Series, you'll also receive dozens of the most popular public domain and user-supported programs, such as data base manager, word processor, calendar generator, appointments reminder and much, much more.

15-Day No-Risk Trial

To order your first module without risk, send the postage-paid card today.

Examine the first module for 15 days and see how the Series will help you make your computer do exactly what you want it to do!



If someone has beaten you to the card, write to us for ordering information about the Contemporary Programming and Software Design Series.



McGraw-Hill
Continuing Education Center
3939 Wisconsin Avenue
Washington, DC 20016

"The World of Commodore," held annually in Toronto, is an important showcase for new products. This year's gathering did not disappoint.

as a computerized teacher has ever used. The idea is that she will customize lessons for you, depending on your progress, and you can even see how she does it. EA's Ken Tanenbaum was proudly distributing the *New York Times'* glowing review of the program, which says the package is the best typing program they've seen.

Peripherals

The show featured several displays of 64/128 hardware peripherals, but not much was actually new. One item was Xetec's *Super Graphix Gold*, a printer interface with a built-in 32K buffer, 16 dip switches, screen-dump capability, and many other features. It supports fast serial on the 128, with an accompanying disk that contains 40 usable fonts.

Bodylog's large booth drew constant attention from customers fascinated by its health and relaxation software. The company is constantly adding to its unique line, with such products as the *Step-In-Time Machine*, the *Enhanced Stress Reduction Package*, and the *Cardio Exercise Package*. The latest is *Heartlab*, which includes a pulse-rate sensor and applications that convert your heart signals into sounds, animations, and even games.

Multi-Link (Unionville, Ontario) demonstrated its classroom-oriented networking system for the 64/128. The Multi-Link central board connects your 64 or 128 through a 20-megabyte hard drive (included) to as many as 48 other 64s or 128s. Students can talk to one another or interact with the teacher (who operates the control device). Of course, all of this access is limited, to keep students from spending too much time talking to one another; and individual machines can be disengaged from the network and operated as stand-alone devices. Students can work on separate programs or the same programs, and the control device can operate a program without the teacher's actual presence. At over

\$3,000 for a ten-station system (not including the computers themselves), the system is far from inexpensive, but its educational potential is strong.

Games

The 64 is still regarded as the best game machine available, and the best games continue to be developed for it. While few new games made their debut at the show, a number were announced for release within a few weeks.

Most of them came from Electronic Arts. SSG's *Halls of Montezuma* (already released) expands the popular Battlefront system, while *Great Battles of the American Civil War* will soon follow. *Bard's Tale III* (fantasy role-playing) is due soon, as is *Skyfox II* (player-perspective air combat), *Strike Fleet* (naval strategy and combat), and the intriguing *Skate or Die* (professional skateboarding; reviewed in this issue)—all from Electronic Arts.

The PC 10-III

Commodore's major announcement was the introduction of the PC 10-III, its latest in the PC-compatibles line. The concept behind the 10-III is an MS-DOS system with the most popular features built-in, thereby preventing the buyer from having to spend extra money right off the bat.

The 10-III is XT-compatible and contains 640K RAM, two 5¼-inch drives, and graphics capabilities in the main board. With software-controlled running speeds of 4.77, 7.16, and 9.54 megahertz, a socket for an 8087 math coprocessor, and a built-in XT hard disk interface, the PC 10-III makes up for its inclusion of only three expansion slots. There is room internally for a half-height hard drive.

The Amiga

The star of the World of Commodore was unquestionably the Amiga, with 1000's, 500's, and 2000's everywhere. Software

ranged from arcade games (Discovery Software's *Arkanoid*) through new word processors (Abacus' *TextPro* and The Disc Company's *KindWords*) and other productivity tools, all the way to professional sound programs (SoundQuest's Editor/Librarian series), video programs (Byte By Byte's *Sculpt 3D* and Aegis Development's *VideoScape 3D*), desktop publishing programs (Gold Disk's *Professional Page*), and even a pairing generator system for commercial airlines (Airware's AWS-1000). Much of the software was clearly aimed for use by professionals, an emphasis that Commodore itself seemed to stress throughout.

And What Of The 64/128?

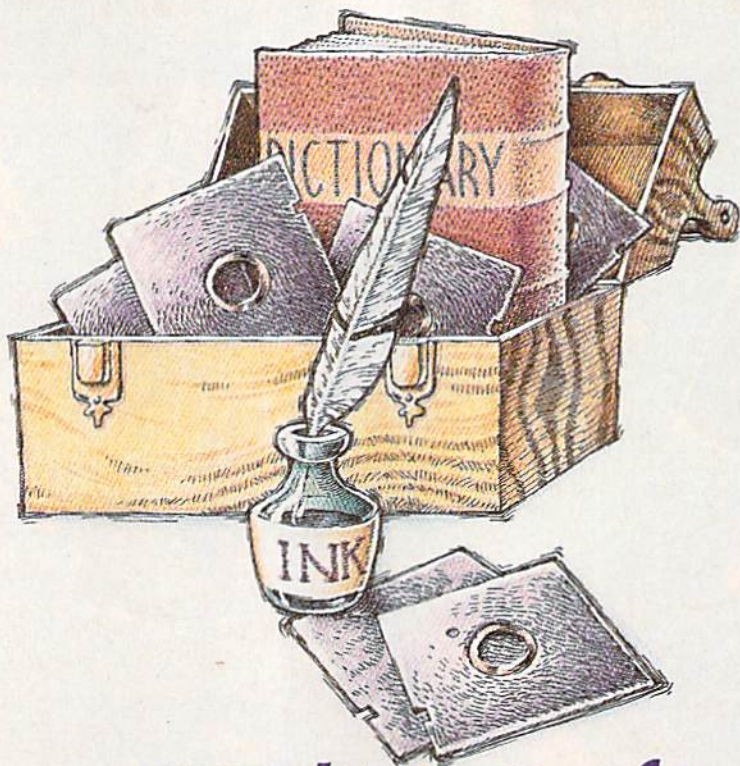
In an interview after the show, Stan Pagonis, director of marketing operations for Commodore Canada, explained the reasons for the show's Amiga orientation. "Because we believe the Amiga is our future," he said, "we're going to concentrate on it." Even so, he emphasized that the multidisplay Commodore area contained a balance among Amiga, 64/128, and PC exhibitions, and that the seminars and stage shows continued this balance.

Certainly the 64 and 128 were well-represented in the seminars, and on the stage were many software and hardware demonstrations for these machines. But on the floor itself, the Amiga was king.

What of Commodore's commitment to the 64? Despite the almost inevitable rumors circulating about Commodore pulling the plug on its most famous eight-bit machine, Pagonis stressed that the 64 was still here and that it won't die. He believes that people continue to buy the 64 because of the wealth of programs produced for it, the most, in all likelihood, for any single home computer.

More important, 64 software is getting better all the time.

The underlying message is quite clearly this: Commodore will push the Amiga with all its strength, but as long as the 64 continues to be bought, it will continue to hold a significant place in the world of Commodore. And as long as developers are willing to support it, that place will continue to be substantial. ■



Super CP/M Software For The 128

Part 1: Writer's Toolbox

Clifton Karnes, Assistant Editor

If you're new to 128 CP/M or you're thinking about exploring it, then you'll find this article—the first in a two-part series—an excellent introduction to some of the best available software. If you're a 128 CP/M veteran, you may discover some exciting products you've overlooked.

The most amazing thing about the Commodore 128 is that it can run in four different modes, each under a different operating system: 64, 128, CP/M, and GEOS. Most 128 users are familiar with the 64 and 128 modes of their machines, and GEOS is becoming more popular each day, but what about CP/M? With all the impressive competition from the other modes, what does CP/M offer the 128 user?

CP/M allows a 128 owner to access a vast collection of well-tested public domain and commercial programs, especially in two key

areas—writer's tools and programmer's tools. Writer's tools include word processors, spelling checkers, grammar checkers, and so on. Programmer's tools are programming languages, text editors, assemblers, and the like.

In this first installment, we'll explore outstanding CP/M products for writers. Included are discussions of two word processors, two spelling checkers, and a grammar aid. Next month, we'll explore 128 CP/M programmer's tools. Let's get started by taking a look at CP/M word processors.

WRITE

It's a well-established fact that microcomputer owners use their computers more for word processing than anything else, and Commodore users are no exception. While 128 CP/M users have several word processors to choose from, two stand out from the rest. One is the classic *WordStar*. The other is a little-known but powerful package called *WRITE*, available from Workman & Associates.

WRITE (Writer's Really Incredible Text Editor) has an interesting history. It was originally developed for professional creative writers and has been used by many of these writers in both prerelease and commercial versions for years. *WRITE* users are often fanatical about its virtues. Arthur Naiman, to give just

STOP FIGHTING WORLD WAR II

Take command of the most modern naval task force in

the world. Control an entire fleet of warships equipped

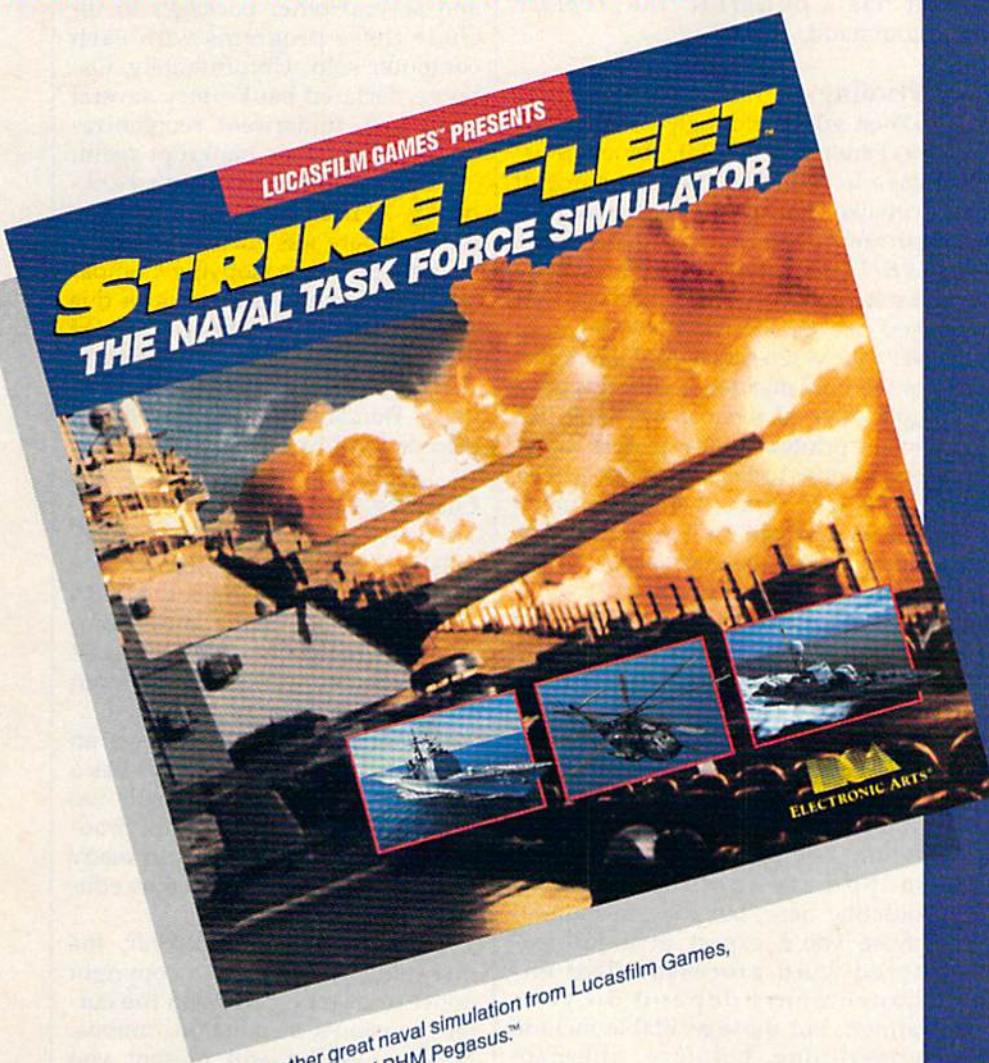
with hi-tech weaponry and surveillance systems. Your theater

of operations: today's hot spots like the Persian Gulf,

the Falklands and the North Atlantic. As realistic as tonight's

six o'clock news.

EVERY OTHER NAVAL SIMULATION IS HISTORY.



Another great naval simulation from Lucasfilm Games,
developers of PHM Pegasus.™

All screen shots © 1987 Lucasfilm Ltd.



Hunt down the enemy with phase-array radar and ultra long-range sonar surveillance systems. Launch Seahawk, Lynx or Seasprite helicopters for remote targeting and anti-sub warfare. Modern weapon systems include Phalanx auto-cannons, Harpoons, Exocets and Tomahawk cruise missiles.



Choose from 10 individual missions or fight a gut-wrenching campaign spanning 4 separate conflicts.



Command your fleet from the Combat Information Center. Take control from the bridge of any vessel or the cockpit of any helicopter.



Configure your task force from a dozen different classes of vessels. Like Spruance destroyers, Ticonderoga cruisers and Oliver Hazard Perry frigates. Deploy up to 16 vessels in your fleet.



ELECTRONIC ARTS®

Screen shots represent C64 version. Others may vary.

HOW TO ORDER: Visit your retailer or call 800-245-4525 for direct VISA or MasterCard orders (in CA call 800-562-1112). The direct order price is \$29.95 for the C64 version and \$34.95 for the Apple version. Send a U.S. check or money order to Electronic Arts Direct Sales, P.O. Box 7530, San Mateo, CA 94403. Add \$3 shipping and handling (\$5 for shipping to Canada). Please allow 1-2 weeks for U.S. delivery. C64 is a registered trademark of Commodore Electronics Limited. Apple is a registered trademark of Apple Computer. TM & © 1987 Lucasfilm Ltd. All rights reserved. Electronic Arts, authorized user.

one example, wrote his definitive book *Introduction to WordStar* with *WRITE*. Let's see what's behind the enthusiasm.

The first thing you'll notice about *WRITE* is its small size—under 22K. The entire program, along with your text, resides in the 128's memory. Since *WRITE* is memory-resident, it's fast. Because it's small, you can easily use it with a one-drive system: You load the program, remove the disk, insert your data disk—and you're ready to go. Because most 128 users have single-drive systems, this is an important feature.

In Action

You can invoke *WRITE* with or without specifying a filename. If the filename option is used, the program moves directly to the editor with your file in memory, ready to edit. If you invoke *WRITE* without a filename, you'll find yourself in what's called the *disk block*.

The disk block is *WRITE*'s outer sanctum. With its menu commands, you can do all the usual file operations: save, load, print, get help, and exit. In addition, there are several disk commands, including those to view a sorted directory, kill files, rename files, set the user number, and change drives.

The disk block also displays the number of bytes free and number of files unused on the logged-in disk, the workspace in memory available, and the number of words in the current text. You can also set tabs, change the width of the video display, and clear all or part of the workspace.

Hitting the Escape key will take you from the disk block to the edit block, where you enter text. You'll find the screen completely clear—no column numbers, line numbers, vendor's names, menus, or other distractions. The only thing *WRITE* places on your screen—except for your text—is a guide showing the tab settings, and even this is optional. *WRITE* leaves about 37K free for text. Files larger than this can be linked—a procedure with which most Commodore users are familiar.

WRITE's editing commands are single control-character sequences and are well thought out. All the normal cursor-movement commands are provided, and some

have nice features. The home command, for example, will move the cursor home if it's not there and to the bottom of the screen if it's in the home position. The move-to-the-beginning-of-the-line command works on the same principle.

Another handy editing feature is the overwrite-to-insert mode change. When you switch to insert mode, instead of seeing the usual translucent flashing block, the cursor becomes solid with an arrow in it. This is extremely useful: You always know which mode you're in without cluttering the screen with messages.

In addition to the usual cursor-movement and editing commands, *WRITE* can copy and delete marked blocks (to move text, you simply copy it and delete the original), and it has a powerful *find/replace* command.

Printing

When you're through entering text and are ready to print, you press Escape to return to the disk block. If you like, you can preview what your printed document will look like. *WRITE* is not a what-you-see-is-what-you-get word processor, but you can use the width command to set your video screen to the margins of the final document and thus get a good idea of what it will look like when printed. Many people, however, prefer to take the video screen on its own terms, getting as much text as they can on it without being distracted by page breaks, double-spaced lines, and so on.

To print, select the print option from the disk block. This takes you to the print block menu where you'll see a list of print and format options. You can change print options—like margins—on the command line just before printing, or you can embed them in your document. The printing format commands are too numerous to describe here, but they include all those you'd expect in a full-featured word processor. Text enhancements depend on your printer, but those available include underlining, boldface, alternate character sets, superscripts, subscripts, and additional fonts.

WRITE is consistently intelligent and considerate. As a word processor for the CP/M mode of the 128, it's a strong contender.

WordStar

WordStar is considered by many to be the most famous piece of software ever written. When the 128 first arrived, many owners looked forward to being able to use this classic in their 128's CP/M mode. Unfortunately, most found a CP/M version of *WordStar* either impossible to obtain or prohibitively expensive. But in a strange twist of fate, this venerable text cruncher is again readily available, and at a bargain price. Here's a little background.

Adam Osborne started the practice of bundling software with his company's microcomputers. The Osborne Computer Company made arrangements with the owners of *WordStar*, MBASIC, CBASIC, and several other packages to include these programs with each computer sold. Unfortunately, Osborne declared bankruptcy several years ago, underwent reorganization, and has gone bankrupt again.

As a result of Osborne's bankruptcy, all its in-house stock of bundled software was auctioned. Public Domain Software Copying Company (PDSC) purchased much of this software and is offering it to CP/M users at bargain-basement prices.

One of the titles PDSC is offering is *WordStar*, and, at \$39.95, its price is hard to argue with.

Gearing Up

The version of *WordStar* that PDSC sells is 2.26. It's preconfigured for the Osborne I, and since the 128's CP/M terminal emulation is compatible with the Osborne's, the supplied version works fine without any initial installation.

WordStar is in many ways an easy word processor to use. It has a large number of commands (as you'd expect with a powerful product), but the program has so many help screens and menus that editing is surprisingly easy.

When you run *WordStar*, the first thing you'll see is a copyright notice and some details on the current version's installation options. Pressing Return will present you with a menu of disk commands and a directory of files on the logged-in disk. You can create a document (using *WordStar*'s special format codes), create an ASCII text file, use MailMerge (included with *Word-*

T · H · E EVOLUTION OF THE PAPER CLIP



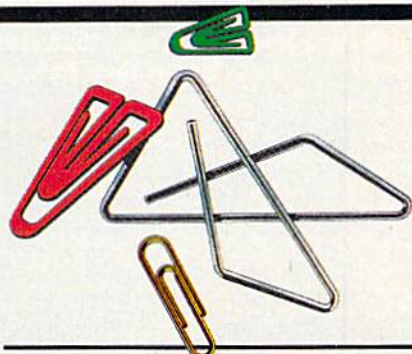
1900

Norwegian inventor, Johann Waaler, patents the paper clip in Germany. The metallic device allows one to attach sheets of paper together.



1950

By virtue of its sheer, simple power, Waaler's paper clip endures to become an indispensable item for both the home and office.



1970

While computers diminish paper flow, new-fangled variations of Waaler's paper clip emerge in an array of sizes, shapes and colors. Evolutionary note: When man can no longer invent, he must improve.



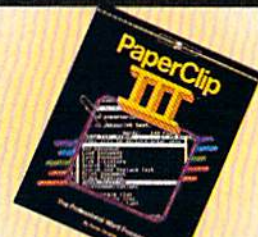
1982

Batteries Included invents a powerful word processing program for Commodore® users—PaperClip®. Compatible with virtually every popular printer, PaperClip provides users with fast, flexible editing and formatting freedom.



1986

PaperClip II becomes the #1 best selling C128® word processing program. Added editing and formatting features include word-wrap and an 80-column screen mode. Built-in telecommunications and a spelling checker make the second generation a supreme package. Omni Magazine calls PaperClip II "the Cadillac of word processors."



1987

Once again, Batteries Included outdoes itself—and the competition. Presenting more formatting commands than ever before, PaperClip III lets users select multiple line headers/footers, as well as outline formats. Pop-up menus provide easier access to a host of improved functions and printing options. The best keeps getting better...

1988

Upgrade to PaperClip III by April 1, 1988. We're so sure that this is the best C64/128 word processing program, that we invite you to upgrade from any other word processor by sending us \$25.00 (plus \$3 shipping and handling) along with the manual cover from your

current program. If you already own previous versions of PaperClip, send us \$15.00 (plus \$3 shipping and handling) with PaperClip manual cover. Either way, we'll give you a 30-day, money-back guarantee to ensure your complete satisfaction. No facsimiles, please. Send check, money order or Visa/MasterCard information to: Electronic Arts, PaperClip III Upgrade, P.O. Box 7530, San Mateo, CA 94403.



ULTIMATE FORMS
FOLLOW ULTIMATE FUNCTIONS

BATTERIES INCLUDED®



TOTAL BACK UP POWER TAKES A QUANTUM LEAP!

ACTION REPLAY IV THE ULTIMATE UTILITIES/BACK-UP CARTRIDGE FOR THE 64/128

• Action Replay allows you to Freeze the action of any memory Resident Program and make a complete back-up to disk or tape – but that's not all . . . Just compare these features

Simple Operation: Just press the button at any point and make a complete backup of any* memory resident program to tape or disk.

Turbo Reload: All backups reload completely independently of the cartridge at Turbo speed.

Sprite Monitor: View the Sprite set from the frozen program – save the Sprite – transfer Sprites from one game to another. Wipe out Sprites, view the animation on screen. Create custom programs.

Sprite Killer: Effective on most programs – make yourself invincible. Disable Sprite/Sprite/Background collisions.

Unique Picture Save: Freeze and save any Hires Screen to tape or disk. Saved in Koala, Blazing Paddles Format.

Screen Dump: Print out any Screen to Host or Printers. 16 Gray Scales, Double size print options.

ONLY
\$59⁹⁹

**POWERFUL DESIGN WITH
ON BOARD LSI LOGIC PROCESSOR
CHIP PLUS 40K OF ON BOARD
ROM/RAM!**

Compact
Efficient compacting
techniques – 3 programs per disk
side – 6 programs if you use both sides.

Single File: All programs saved as a single
file for maximum compatibility.

Utility Commands: A host of additional commands:
– Autonom, Append, Old, Delete, Linesave, Printor,
lister

Fast Loader: Also doubles as a Fastload cartridge to
speed up your commercial disk to upto 6 times normal
speed

Unstoppable Reset: Reset button to Retrieve
System and Reset even so called Unstoppable
Programs

Fully Compatible: Works with 1541/C, 1570, 1571
and Datacassette with C64,128, 128D (in 64 Mode)

Compatible: With Fast DOS and Turbo Rom Systems

Disk Utilities: Fast Format, Directory, List, Run and
many other key commands are operated by Function
Keys

Unique Restart:
Remember all of
these utilities are avail-
able at one time from an
integrated operating system.
A running program can be Frozen
to enter any Utility and the program
is restarted at the touch of a key – with-
out corruption

LSI Logic Processor: This is where Action
Replay IV gets it's power: A special custom LSI
chip designed to process the logic necessary for this
unmatched Freeze/Restart power. No other cartridge
has this power!

WARP 25 BREAKS THE 5 SECOND BARRIER!!!

- Yes it's true WARP 25 is the World's fastest
Save Disk Utility – A typical backup will
reload in under 5 seconds – that's 4 times
faster than ANY other competing utility!!
- No additional hardware required
- No special disk formats – WARP files can be
mixed with other standard files
- 200 Blocks will load in 5 seconds – 250
Blocks in under 7 seconds!!
- Super reliable
- No other disk Turbo comes close
- WARP Load/Save also available from Basic for
your own files

PLUS UNIQUE CODE CRACKER MONITOR

- Freeze any program and enter a full machine
code monitor
- Full Monitor Features – Disassemble, Hex,
Find, Jump, Compare, Replace, Two Way Scroll,
Full Disk Load/Save, Printer Support etc. In
fact all usual monitor commands plus a few
others
- Because of Action Replay's on Board Ram the
Frozen program can be looked at in it's
ENTIRETY – In it's Frozen state. That means
Video Ram, Zero Page etc. and remember you
see the code in it's Frozen state not in a Reset
state as with competitors products.
- Restart the program at any point
- No corruption
- An absolute must for the program Hacker –
make changes and see your result's instantly!

* In our most recent test we were
unable to find any program that
ARA could not cope with.

**ORDERS
ONLY**

CALL TOLL FREE
1-800-782-9110
IN NEVADA 702-734-9100

CHECK – MONEY ORDER – COD ACCEPTED



ORDERS
NORMALLY
SHIPPED
WITHIN 48 Hrs.

ADD \$3.00 Shipping/Handling
DATTEL COMPUTERS
76 COUNTRY CLUB LANE
LAS VEGAS
NV 89109

DATEL COMPUTERS

256K SUPEROM EXPANDER

- ☐ Now you can select from any of 8 32K EPROMs instantly.
- ☐ 8 sockets to accept up to a 32K EPROM in each.
- ☐ On board operating system -- no programs to load.
- ☐ Program your own EPROMs using our EPROM programmer.
- ☐ No need to have loads of cartridges -- just make a selection from the Superom menu.
- ☐ Directory of utilities on power up.
- ☐ Fully menu driven on power up.
- ☐ Select any slot under software controls.
- ☐ Unique EPROM generator feature will take your own programs -- basic or m/c and turn them into autostart EPROMs. (EPROM burner required).
- ☐ Accepts 2764/27128/27256 EPROMs.
- ☐ On board unstoppable reset.

ONLY \$49.99



TURBO ROM II

Turbo Rom II is a replacement for the actual kernal inside your 64. It provides superfast load/save routines.

- ☐ Loads most programs at 5-6 times normal speed.
- ☐ Saves at 5-6 times normal.
- ☐ Improved DOS support including 10 sec format.
- ☐ Programmed function keys: load, directory, old, etc.
- ☐ Return to normal kernal at flick of a switch.
- ☐ PCOPY -- 250 block file copier.
- ☐ FLOAD -- special I/O loader.
- ☐ Plus lots more.
- ☐ Fitted in minutes -- no soldering usually required. (On some 64's the old ROM may have to be desoldered).

ONLY \$24.99



DIGITAL SOUND SAMPLER

- ☐ The new sampler allows you to record any sound digitally into memory and then play it with astounding effects.
- ☐ Playback forwards/backwards with echo/reverb/ring modulation etc.
- ☐ Now with full sound editing module to produce outstanding effects.
- ☐ Full 8 bit D to A and ADC conversion.
- ☐ MIDI compatible with suitable interface (i.e. Datel unit for \$39.99).
- ☐ Live effects menu includes real time display of waveforms.
- ☐ Line in/line out/feedback controls.
- ☐ Powerful sequencer with editing features.
- ☐ Load/save sample.
- ☐ Up to 8 samples in memory at one time.
- ☐ Complete software/hardware package \$89.99.



TOOLKIT IV

The ultimate disk toolkit for the 1540/1541



- ☐ A disk toolkit is an absolute must for the serious disk hacker. Toolkit IV has more features than most for less.
- ☐ DISK DOCTOR V2 -- Read and write any track and sector including extra and renumbered tracks. Repair damaged sectors. Look underneath read errors.
- ☐ HEADER/GAP EDITOR -- Decodes and displays ALL header information including off bytes and header gap. Rewrite the entire header and header gap. Renumber sectors. Also edit any sector tail gap.
- ☐ DISK LOOK -- Sort directory. Recover lost files. Display file start/end addresses. Disassemble any file program directly from the disk to SCREEN or PRINTER including undocumented opcodes. Edit Bam. Much, much more.

- ☐ FILE COMPACTOR -- Can compact machine programs by up to 50%. Saves disk space. Compacted programs run as normal.
- ☐ FAST DISK COPY -- Copy an entire disk in 2 minutes or less using single 1541.
- ☐ FAST FILE COPY -- Selective file copy. Works at up to 6 times normal speed.
- ☐ FORMATTER -- 10 second format an entire disk or format any individual track or half track 0 to 41. Redefine any of 80 parameters to create or recreate unique disk formats.
- ☐ ERROR EDIT -- Quickly find and recreate all read errors including extra and renumbered tracks or sectors and half tracks from 0 to 41. Even recreates data under errors and allows you to redefine any necessary parameters.

ONLY \$14.99



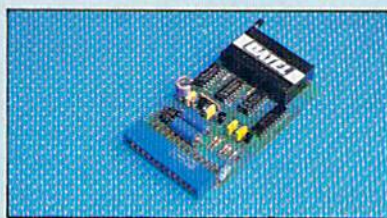
DEEP SCAN BURST NIBBLER™

- ☐ The most powerful disk nibbler available anywhere, at any price!
- ☐ Burst Nibbler is actually a two part system -- a software package and a parallel cable to connect the 1541/1570/1571 to 64/128 (state type).
- ☐ What gives Burst Nibbler its power? Conventional nibblers have to decode the data from the disk before it can transfer it using the serial bus -- when non standard data is encountered they are beat. Burst Nibbler transfers data as raw GCR code via the parallel cable without the need to decode it so you get a perfect copy of the original.
- Will nibble upto 41 tracks. ● Copy a whole disk in under 2 minutes. ● Full instructions.
- Regular updates -- we always ship the latest. ● Fitted in minutes -- no soldering usually required.
- Full or 1/2 tracks. ● No need to buy parallel cable if you have Professional DOS etc.
- Cable has throughbus extension for other add ons.

ONLY \$39.99 COMPLETE

SOFTWARE ONLY \$19.99

CABLE ONLY \$19.99



EPROMMER 64™

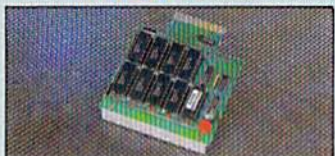
- ☐ A top quality, easy-to-use EPROM programmer for the 64/128.
- ☐ Fully menu driven software/hardware package makes programming/reading/verifying/copying EPROMs simplicity itself.
- ☐ Will program 2716, 2732, 2764, 27128 and 27256 chips. 12.5, 21 or 25 volts.
- ☐ Fits into user port for maximum compatibility with cartridges/Superom Board etc.
- ☐ Full feature system -- all functions covered including device check/verify.
- ☐ We believe EPROMmer 64 is the most comprehensive, most friendly and best value for money programmer available for the 64/128.
- ☐ Ideal companion for Superom Board, Cartridge Development System, our kernal expanders or indeed any EPROM base project.
- ☐ Comes complete with instructions -- plus the cartridge handbook.

ONLY \$69.99 COMPLETE

ULTRA CRUNCHER

- The ultimate cartridge based program compactor.
- ☐ Compact by upto 30%!
- ☐ More programs per disk.
- ☐ 3 compacting programs on one cartridge
- ☐ Fast loading/saving routines -- works with Disk Demon
- ☐ Can even further compact AR III files!
- ☐ 250 block file copy function
- ☐ Full DOS support including fast format

ONLY \$24.99 COMPLETE
OR \$14.99 ROM ONLY



DUPLIKATOR™

- ☐ Copies whole disk in one pass -- only one drive required!
- ☐ Makes backup copies in eight seconds!
- ☐ Duplikator is the fastest, most efficient and easiest to use disk copying system ever conceived.
- ☐ Comes complete with 256K on-board ram and it's own operating system -- no software to load.
- ☐ Makes multiple copies from one original.
- ☐ Full disk verification during backup process.
- ☐ Copies standard software as well as errors 2128 and upto 40 tracks.
- ☐ Full disk error check in eight seconds.
- ☐ Full disk verify against ram in fifteen seconds.
- ☐ A must for clubs, user groups etc. How else can you copy over 250 disks an hour for less than \$200.
- ☐ Comes complete with on/off switch and reset button.
- ☐ Fitted in minutes -- no soldering usually required.

ONLY \$159.99

CALL TOLL FREE
1-800-782-9110

IN NEVADA 702-734-9100

CHECK - MONEY ORDER - COD ACCEPTED



ORDERS
NORMALLY
SHIPPED
WITHIN 48 Hrs.

ADD \$3.00 Shipping/Handling
DATEL COMPUTERS
76 COUNTRY CLUB LANE
LAS VEGAS
NV 89109

Star), turn the file directory on or off, change the logged disk drive, run a program, set the help level, exit to CP/M, print a file, delete a file, copy a file, or rename a file.

If you choose to edit a document, you'll be guided through the initial steps, and finally find yourself in *WordStar's* editing screen. The top third of the screen will contain a menu of editing commands with all the one-control-character commands defined. To see the definitions of the two-control-character commands you simply type the first control character and wait. *WordStar* will place a help menu of this command at the top of the screen.

The *WordStar* command structure has become a standard in the microcomputer community, and most word processing and text editing packages either use it or support it. Learning *WordStar's* commands may take some time, but it certainly has its benefits.

Probably the most important command for a beginning *WordStar* user is Control-J, which displays the Help menu. One of the options you can select from the Help menu is to set one of *WordStar's* four help levels.

- 3 Displays all menus and explanations.
- 2 Suppresses main editing menu.
- 1 Also suppresses prefix menus.
- 0 Also suppresses command explanations.

The default Help level is 3, and it's a good idea to use this level until you're familiar with the commands. As you feel more at home with *WordStar*, you can gradually dispense with levels of help until you find a level with which you're comfortable.

WordStar comes with all the editing commands you'd expect in a high-quality word processor. If fact, if you've used another word processor, *WordStar* will probably seem familiar since it helped set the standards.

When you've finished editing your document you can return to the main editing menu and save the file, print it, or perform any of the tasks mentioned earlier.

WordStar comes with the original Osborne documentation, which is complete and easy to use. One notable section helps you patch *WordStar* to create a custom printer driver. (Patching a program involves changing certain bytes to

make it perform differently.) The documentation package even includes stick-on key tops with *WordStar* commands on them to make using the word processor easier.

On the negative side, *WordStar* is highly disk-intensive and for this reason is somewhat slow. And it really can't be used on a one-drive system, though one drive and a Commodore RAM expansion module (1700 or 1750) would give excellent performance.

WordStar has much to recommend it. It is a solid product—a standard with which you'll probably be glad you're familiar—and it's available at a price that's hard to resist.

Spelling Checkers

If word processing is the most-used microcomputer application, then spell checking can't be far behind. And next to word processing, having a computer check your spelling is one of the most exciting benefits of the microcomputer revolution. There are two excellent products to recommend in this category: One is the commercial CP/M version of *The WORD Plus* from Oasis, and the other is a public-domain program, *SPELL*.

The WORD Plus

First, *The WORD Plus* is much more than just a spelling checker. It's a collection of writing tools. The spelling checker itself is a combination of four programs working together—TW, *SPELL*, REVIEW, and MARKFIX. *SPELL* uses a 45,000-word dictionary to locate errors, REVIEW makes correcting them easy, MARKFIX actually makes the corrections, and TW orchestrates the whole ensemble.

If you're familiar with spelling checkers, you'll feel right at home with *The WORD Plus*. You simply tell the program the name of the file to spell check, and it displays, one by one, each word not found in its dictionary. When each word is displayed, you have several options. You can update the dictionary (that is, add the current word to it), mark the word (to decide about it later, for example), discard the word (pass over it with no action), correct the word, view the previous word, look at the next word, look up the word in the dictionary, view the word in

context, or resume your review.

In addition to these spelling tools, *The WORD Plus* contains several other writer's aids, including HYPHEN, FIND, ANAGRAM, LOOKUP, DICTSORT, and WORDFREQ.

HYPHEN reads a text and automatically inserts hyphens into long words. If you're preparing text to be used in columns—in a newsletter, for example—then this can be very handy.

FIND, ANAGRAM, and LOOKUP offer three ways to access *The WORD Plus's* massive dictionary. LOOKUP finds words for you in the dictionary, FIND is a tool for crossword-puzzle enthusiasts, and ANAGRAM finds anagrams in a text.

The last three tools in *The WORD Plus*—WC, DICTSORT, and WORDFREQ—all perform house-keeping duties. WC counts the words in a document, WORDFREQ generates a list of the words used in a document along with a count of how often each is used, and DICTSORT alphabetizes your own custom dictionaries.

There is little to complain about with *The WORD Plus*. It is an extremely powerful set of writer's aids that anyone serious about writing should consider.

SPELL

If you're interested only in a pure spelling checker and don't need an industrial-strength application like *The WORD Plus*, then the public domain *SPELL* may suit you well.

Using *SPELL* is easy: Just tell it the file you want to check and it compares each word in the text with its own dictionary and a user-defined dictionary—if one is on the disk. Words not found in either dictionary are marked with a CONTROL-@ (the marking character can be changed if you wish).

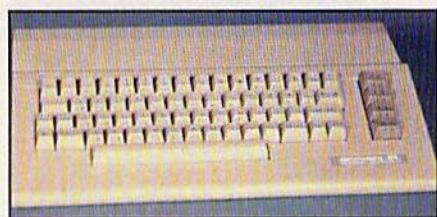
SPELL's dictionary is not quite as large as *The WORD Plus's*, but it gets high grades for performance. In fact, *The WORD Plus* notwithstanding, *SPELL* is better than many commercial products. (It also comes complete with Z80 assembly language source code.)

Electronic Grammar School

You may be surprised to learn that your 128's CP/M mode can not only make writing easier with word processors and protect you from

The Commodore Connection

COMMODORE 64C



**ONLY
15400**

1802 Monitor	17400
1541C Drive	16400

COMMODORE 128



**ONLY
24400**

1084 Monitor	28900
1571 Disc Drive	22400

MONITORS

COMMODORE	
Commodore 1802	174.00
Commodore 1084 for 128	289.00
MAGNAVOX	
8502 13" Composite Color	179.00
8562 13" Composite/RGB	279.00
8CM515 14" Composite/RGB	289.00
THOMSON	
4120 14" RGB/Composite	259.00
ZENITH	
ZVM 1220/1230	(ea.) 99.99



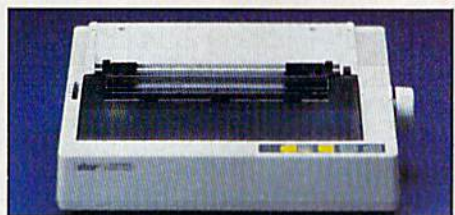
**COMMODORE 1084
Monitor for 128 \$289**

ACCESSORIES

Curtis Emerald - 6 outlet	62.99
Curtis Universal Printer Stand	17.99
Computer Specialties Power Plus	54.99
CB128 Universal Monitor Cable	16.99
ALLSOP	
Disk File 30 (3 1/2")	9.99
Disk File 60 (5 1/4")	9.99
MAXELL	
MD1-M SS/DD 5 1/4"	8.49
MD2-DM DS/DD 5 1/4"	9.49
MF1-DDM 3 1/2" SS/DD	12.49
MF2-DDM 3 1/2" DS/DD	18.49
SONY	
MD2D DS/DD 5 1/4"	9.49
MFD-IDD 3 1/2" SS/DD	12.99
MFD-2DD 3 1/2" DS/DD	19.99

PRINTERS

EPSON	
FX-86E 240 cps, 80 Col.	Call
EX-800 300 cps, 80 Col.	Call
LQ-1000 24 wire, 132 Col. w/tractor ..	569.00
BROTHER	
M-1109 100 cps, 9 Pin	199.00
HR-40 40 cps, Daisywheel	599.00
HEWLETT PACKARD	
Think Jet	369.00
OKIDATA	
Okimate 20 Color Printer	129.00
ML-182 120 cps, Dot Matrix	229.00
ML-192 + 200 cps, Dot Matrix	329.00



**STAR MICRONICS
NX10 \$149**

NX-10C 120 cps, Dot Matrix	189.00
NX-15 120 cps, 132 Col.	339.00
TOSHIBA	
P321SL 24 Wire 80 Column	539.00
P351C 24 Pin Color	1099.00

C64/128 SOFTWARE

COMMODORE	
Jane-integrated (128)	39.99
Geos for 64, 64C, 128	37.99
BRODERBUND	
The Print Shop	29.99
The Toy Shop	39.99
MICROPROSE	
Silent Service	29.99
F15 Strike Eagle	29.99
SUBLOGIC	
Flight Simulator	37.99
Jet Simulator C64	37.99

MODEMS

ANCHOR	
Volkmodem 12 300/1200	99.99
6480 300-1200 Baud for 64/128	109.00
Omega 80 300-1200 Baud for Amiga ..	119.00
HAYES	
Smartmodem 300	139.00
Smartmodem 1200	319.00
COMMODORE	
Amiga 1680-1200 BPS	119.00
CBM 1660 (C-64)	49.99
NOVATION	
Parrot 1200	119.00
PRACTICAL PERIPHERALS	
1200 BPS External	159.00

DRIVES

COMMODORE	
1581 3 1/2" Ext.	229.00
1541C	164.00
1571	224.00
SUPRA	
20 mb (Amiga)	759.00
XEBEC	
20 mb (Amiga) 9720H	849.00



**INDUS
DRIVE \$199**

In the U.S.A. and Canada

Call toll-free 1-800-233-8950

Corporate & Educational Institutions call toll-free: 1-800-221-4283
CMO, 477 East Third Street, Dept. A4, Williamsport, PA 17701

ALL MAJOR CREDIT CARDS ACCEPTED

POLICY: Add 3% (minimum \$7.00) shipping and handling. Larger shipments may require additional charges. Personal and company checks require 3 weeks to clear. For faster delivery, use your credit card or send cashier's check or bank money order. Credit cards are not charged until we ship. PA residents add 6% sales tax. All prices are U.S.A. prices and are subject to change, and all items are subject to availability. Defective software will be replaced with the same item only. Hardware will be replaced or repaired at our discretion within the terms and limits of the manufacturer's warranty. We cannot guarantee compatibility. All sales are final and returned shipments are subject to a restocking fee.



COMPUTER MAIL ORDER

DON'T SETTLE FOR LESS...

TUSSEY'S SPECIAL PACKAGES

C= COMMODORE 128



\$219

1571 DISK DRIVE\$229.00
1084 MONITOR\$269.00

C128 w/1571 Drive\$444.00
C128 w/1571 & 1084 Monitor\$699.00
C128 w/1571 & Thomson 4120\$659.00

COMMODORE 64C



\$159.95

1541C DISK DRIVE\$169.95
1802C MONITOR\$189.00

64C w/1541C Drive\$328.00
64C w/FSD-2 Drive\$299.00
1802C with either package\$184.00

COMMODORE 128D



\$439

■ 128K Memory
■ Built in 1571 Disk Drive
■ Detachable Keyboard

128D w/1084 Monitor.....\$699.00
128D w/Thomson 4120\$659.00

GAME GALLERY Educational Software too! All Games stocked for quick ship!!!

ACCESS

* Echelon\$29.95
* Leader Board\$24.95
* Leader Board Tour. Disk\$16.95

ACCOLADE

* Ace of Aces\$17.95
* Apollo\$19.95
* Comix\$19.95
* 4th & Inches\$22.95
* Hard Ball\$22.95
* Killed Until Dead\$CALL
* Lipstick Plus\$19.95
* Miniputt\$24.95
* Test Drive\$CALL

ACTIONSOFT

* Last Ninja\$27.95
* Thunder Chopper\$24.95
* Up Periscope\$19.95

ACTIVISION

* Air Rally\$CALL
* Aliens\$22.95
* Gamemaker Scifi Library\$15.95
* Gamemaker Sports Lib\$15.95
* Garry Kitchen's Gm'makr\$24.95
* Gamemaker Package
with all Libraries\$39.95
* Maniac Mansion\$29.95
* Music Studio\$27.95
* Shanghai\$26.95
* Transformers\$22.95

ARTWORK

* NBA\$29.95

BRODERBUND

* Lode Runner\$24.95
* Moebius\$29.95
* Superbike Challenge\$CALL
* Ultima IV\$39.95
* Ultima V\$39.95

CINEMAWARE

* SDI\$CALL
* Defender of the Crown\$22.95
* King of Chicago\$24.95

COSMI

* Def Con 5\$17.95

DATA EAST

* Commando\$17.95
* Karate Champ\$24.95
* Kid Niki\$19.95
* Speed Buggy\$19.95

DATASOFT

* Alt Reality/Dungeon\$24.95
* Bismark\$24.95
* Dark Lord\$19.95
* Force 7\$19.95
* Theatre Europe\$27.95
* Tobruk\$27.95
* Tomahawk\$24.95
* Video Title Shop\$25.95

ELECTRONIC ARTS™

* Amnesia\$27.95
* Arctic Fox\$24.95
* Bard's Tale\$32.95
* Bard's Tale II\$29.95
* Carriers at War\$37.95
* Chessmaster 2000\$26.95
* Dan Dare\$16.95
* Demon Stalkers\$CALL
* Dragon Slayer\$19.95
* Dungeon Runners\$19.95
* EOS(Earth Orbit Station)\$19.95
* Instant Music\$24.95
* Legacy of the Ancients\$19.95
* Marble Madness\$23.95
* Murder Party\$25.95
* Outrageous Pages\$39.95
* Patton vs Rommel\$29.95
* PHM Pegasus\$24.95
* Pinball Construction Set\$9.95
* Skate or Die\$24.95
* Sky Fox II\$24.95
* Starfleet II\$29.95
* Strike Fleet\$29.95
* World Tour Golf\$27.95
* Yeager AFT\$24.95

EPYX

* 500 XJ Joystick\$14.95
* California Games\$24.95
* Championship Wrestling\$27.95
* Create a Calendar\$19.95
* Destroyer\$24.95
* Movie Monster\$16.95
* Street Sports Baseball\$29.95
* Street Sports Basketball\$29.95
* Sub Battle\$24.95
* Summer Games\$16.95
* Summer Games II\$26.95
* Super Cycle\$14.95
* Winter Games\$24.95
* World Games\$29.95
* World's Greatest Baseball\$24.95
* World's Greatest Football\$28.95

FIREBIRD

* Elite\$22.95
* Guild of Thieves\$24.95
* Knight ORC\$29.95
* Pawn\$24.95
* Star Glider\$24.95
* The Sentry\$27.95

GAMESTAR*

* Championship Baseball\$27.95
* Championship Football\$27.95
* GBA Basketball 2 on 2\$24.95
* Top Fuel Eliminator\$19.95

INFOCOM

* Beyond Zork\$34.95
* Hitchhiker's Guide\$22.95
* Leather Goddess\$24.95
* Wishbringer\$25.95
* INVISICLUE BOOKS FOR
ANY INFOCOM GAME\$6.95

LANCE HAFNER for the best
in sports strategy simulation
* 3 in 1 Football\$29.95
* Basketball, the Pro Game\$29.95
* Final Four Basketball\$29.95
* Full Count Baseball\$29.95

MICROPROSE

* Airborne Rangers\$24.95
* F-15 Strike Eagle\$21.95
* Gunship\$22.95
* Kennedy Approach\$17.95
* NATO Commander\$24.95
* Pirates\$24.95
* Silent Service\$24.95
* Solo Flight\$24.95
* Stealth Fighter\$29.95

MINDSCAPE

* Fist\$19.95
* Gauntlet\$29.95
* Indiana Jones\$22.95
* Indoor Sports\$24.95
* Infiltrator II\$21.95
* Paperboy\$24.95
* Perfect Score: SAT prep\$49.95
* Superstar Hockey\$24.95
* Uchi Mata\$19.95
* Urdium\$26.95

Call for prices on
other MINDSCAPE products!

64C BUSINESS AND PRODUCTIVITY

64C DATABASES

* Bank Street Filer\$34.95
* Consultant\$39.95
* Data Manager\$19.95
* Profile 64\$36.95

64C INTEGRATED PKGS

* Homepak\$39.95
* Vizastar 64 4K\$39.95

64C SPREADSHEETS

* Swiftcalc 64 w/sideways\$39.95
* Sideways\$19.95

64C WORD PROCESSORS

* Bank Street Writer\$32.95
* Font Master II\$34.95
* Font Master 64\$34.95
* Paperclip w/spellpack\$49.95
* Paperclip III\$39.95

MISC GAMES

* Championship Boxing\$17.95
* Hobbitt\$24.95
* International Hockey\$18.95
* SIMON & SHUSTER
* Star Trek-Kobayashi Alt.\$29.95
* Star Trek Promethian Adv\$29.95
* Typing Tutor III\$29.95

SPECTRUM HOLOBYTE

* Falcon\$22.95
* GATO\$19.95
* Intrigue\$22.95
* PT 109\$27.95
* Soko Ban\$17.95

SOFTWARE SIMULATIONS

* Football\$24.95
* Pure Stat Baseball\$29.95
* Pure Stat College BB\$32.95

SSI

* B-24\$24.95
* Eternal Dagger\$24.95
* Phantasia I, II, III (each)\$27.95
* Realms of Darkness\$27.95
* Rings of Zilfin\$24.95
* Roadwar Europa\$29.95
* Shard of Spring\$24.95
* Wargame Const Set\$22.95
* Wrath of Nicodemus\$27.95
* Wizards Crown\$24.95

subLOGIC

* Flight Simulator II\$32.95
* FS II Scenery disks\$CALL
* Jet\$29.95

TIMEWORKS

* Desktop Publisher\$39.95

UNISON WORLD

* Printmaster Plus\$29.95

COMMODORE 128 SOFTWARE

WORDPROCESSOR

* Fleet System 4\$56.95
* Font Master 128\$44.95
* Paperclip II\$54.95
* Paperclip III\$39.95
* Superscript 128\$59.95
* Term Paper Writer\$34.95
* Vizawrite 128\$CALL
* Wordpro 128\$59.95
* Wordwriter 128 w/spell\$49.95

SPREADSHEETS

* Swiftcalc 128 w/sideways\$49.95

DATA BASES

* Consultant\$39.95
* Data Manager 128\$CALL
* Fleet Filer\$29.95
* Perfect Filer\$49.95
* Profile 128\$59.95
* Superbase 128\$64.95

MISC. 128 SOFTWARE

* Accountant Inc\$69.95
* Bobs Term Pro 128\$47.95
* CMS Acct Pkg/128\$124.95
* Desk Manager 128\$34.95
* Mach 128\$39.95
* Partner 128\$54.95
* Personal Acct. 128\$34.95
* Sylvia Porter's Personal
Finance Planner\$54.95
* Vizastar 128\$CALL

Abacus

ALL TITLES IN STOCK!!
Call for price on all books and software titles

GRAPHICS CORNER

* Certificate Maker\$32.95
* Clip Art Vol 1 or 2\$CALL
* Desktop Publisher\$39.95
* GEO Publish\$44.95
* Graphics Library I, II, or III\$16.95
* Newsroom\$34.95
* Outrageous Pages\$39.95
* Print Shop\$25.95
* Printmaster Plus\$32.95

* NEW TITLES!!



TUSSEY COMPUTER PRODUCTS

P.O. BOX 1006, STATE COLLEGE, PA 16804

tcp SHIPS IT

COMMODORE
AMIGA
500
\$CALL



512K RAM Upgrade \$159.00
1010 EXT DRIVE\$219.00
1680 MODEM\$139.00

A500 w/1084 Monitor\$789.00
A500 w/1084 Monitor
& 1010 Drive\$999.00

AMIGA SOFTWARE

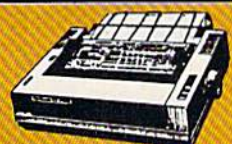
PRODUCTIVITY

Deluxe Music Const Set\$79.95
Deluxe Print II\$99.95
Deluxe Print II\$59.95
Deluxe Video 1.2\$99.95
Draw Plus\$189.00
Logistix\$89.00
Superbase\$89.00
Vizawrite\$89.00
Word Perfect\$CALL

ENTERTAINMENT

Autoduel.....\$34.95	Halley Project.....\$29.95
Balance of Power.....\$29.95	Hot-Cold Jazz.....\$24.95
Bards Tale.....\$39.95	Leisure Suit Larry.....\$44.95
Beyond Zork.....\$37.95	Marble Madness.....\$34.95
Chessmaster 2000.....\$34.95	Racter.....\$27.95
Defender of the Crown.....\$29.95	S.D.I.....\$29.95
Deja Vu.....\$29.95	Silent Service.....\$29.95
Earl Weaver Baseball.....\$39.95	Sinbad.....\$29.95
Ferrari Formula One.....\$39.95	Starfleet.....\$32.95
Flight Simulator II.....\$39.95	Univited.....\$29.95

PRINTERS



Panasonic
Office Automation

2 yr warranty

1080III.....\$159.00
1091III.....\$189.00
1092III.....\$299.00

XETEC

SUPER GRAPHIX JR
Printer Interface\$39.95
SUPER GRAPHIX
Interface w/BK buffer
down loadable fonts\$59.95
Super Graphix Gold.....\$99.95



PRINTER PACKAGES

ALL PRINTERS INTERFACE WITH 64C or C128

star

NP-10 & XETEC Supergraphix Jr\$169.00
NX-1000 & XETEC Supergraphix Jr\$CALL
NX-1000 & XETEC Supergraphix\$CALL

Panasonic

1080III & XETEC Supergraphix Jr\$189.00
1080III & XETEC Supergraphix\$199.00
1090III & XETEC Supergraphix\$219.00

RGB/COMPOSITE COLOR MONITORS FOR THE 128



COMMODORE 1084
640 x 400 Resolution.
4 Operating Modes\$269.00
MAGNAVOX 8562
640 x 240 Resolution.
3 Modes, 2 yr warranty\$239.00
THOMSON 4120
560 x 240 Resolution.
4 Modes, 1 yr warranty\$219.00

All 3 monitors include cables to Commodore 128

Berkeley Softworks

NEW!!... GEO PUBLISH (64/128).....\$44.95

GEOS 128\$44.95	GEOS\$39.95
Geo Calc 128.....\$47.95	Geo Calc\$34.95
Geo File 128.....\$47.95	Geo File.....\$34.95
Geo Program.....\$49.95	Geodex.....\$27.95
Desktop 128.....\$44.95	Desktop.....\$22.95
Geo Write 128.....\$44.95	Fontpack.....\$22.95
Geo Spell.....\$24.95	Geo Write.....\$34.95

FEDERAL EXPRESS

Software orders over \$50.00 & Accessories/Peripherals under 8 pounds will be shipped **FEDERAL EXPRESS** (Yes even at these prices) You only pay TCP's standard shipping charge of \$4.00 per order. Orders arriving before 1:00 PM our time will be shipped out same day. If part of your order is back-ordered the remainder will be shipped UPS Ground for FREE!



SECURITY

- Your Credit Card is not charged until your order is shipped.
- We insure your order at no extra cost to you.
- Tussey is a financially strong and well established company.

CUSTOMER SUPPORT

- After sales support.
- Knowledgeable staff, all graduates of Tussey's "Computer Boot Camp".
- Our advanced warehouse/materials handling system assures your order is shipped out accurately & on time.
- Our IBM 5360 allows instant order and inventory status.

To order by mail: We accept money order, certified check, personal check. Allow 2 weeks for personal & company checks to clear. Shipping: \$4.00 for software and accessories/ \$10.00 for printers and color monitors/ \$8.00 for disk drives and other monitors/ Add \$3.00 per box shipped COD. Call for other shipping charges. Additional shipping required on APO, FPO, AK, HI. Terms: ALL PRICES REFLECT CASH DISCOUNT, ADD 1.9% FOR MASTERCARD OR VISA.

All products include factory warranty. ALL SALES ARE FINAL. Defective items replaced or repaired at our discretion. Pennsylvania residents add 6% sales tax. Prices and terms subject to change without notice.



OKIDATA 180



\$229

- Built in COMMODORE* and EPSON* Interface
 - 180 CPS Print Speed
- Call For Other Okidata Printers

CMS

ACCOUNTING SYSTEM

Pkg. Price for all Modules:
C128 version.....\$124.95
C64 version.....\$119.95

1670 MODEM

Limited Quantities
\$CALL FOR PRICING!!

OCEANIC
FSD-2
DISK DRIVE
1541C Compatible
\$149

C= COMMODORE
1764
256K RAM
EXPANSION
\$119

C= COMMODORE
1581
3 1/2" DISK DRIVE
\$197

Digital Solutions Inc.

Pocket Writer 2.....\$42.95
Pocket Filer 2.....\$39.95
Pocket Planner 2.....\$39.95
Digital Superpak.....\$74.95
Dictionary.....\$12.95

DISKS

per box of 10
BONUS DISKS
SS/DD\$6.45
DS/DD\$6.95
TUSSEY DISK CLOSEOUTS!!!
SS/DD\$4.49
DS/DD\$4.99

Call for Price on Verbatim and Maxell Disks!!

TELEX: 620 37782 (TUSSEY UD) FAX: 814-237-4450
Regular Hrs: 8:00AM-10:00PM Mon-Fri, 10:00AM-6:00PM Sat, 12:00PM-8:00PM EST

CALL TOLL FREE 1-800-468-9044

INSIDE PA CALL 814-234-2236

01/88

tcp

spelling errors with spelling checkers, but it can also check your grammar and style. *Punctuation + Style* from Oasis (the makers of *The Word Plus*) can save you from committing hundreds of stylistic inelegances and from just plain making mistakes.

P+S is really two programs, CLEANUP and PHRASE. CLEANUP finds a multitude of punctuation errors: missing punctuation, extra spaces, missing capitalization, incorrect capitalization, unbalanced quotation marks, double words, and a host of other errors.

PHRASE helps you with your writing style. The results are impressive, but the idea behind PHRASE is simple. PHRASE works just like a spelling checker, but instead of using a dictionary of *correctly* spelled words, it has a dictionary of commonly *misused* phrases. It attempts to match these phrases with those in your document, marks the ones it finds, and adds an explanation of each error.

What does PHRASE think constitutes poor style? First, it marks all use of the passive voice. Generally, writing that avoids the passive

voice is stronger and more energetic. PHRASE also marks phrases that are awkward, clichéd, erroneous, folksy, muddy, pompous, redundant, or wordy. And, just like a spelling checker, you can add your own problem phrases to the dictionary or delete those it already contains.

P+S doesn't change anything by itself—you still have complete control over your writing—and occasionally it makes a silly mistake, but it is guaranteed to improve your writing style.

An Investment

You may have noticed that CP/M software is more expensive than its 64 and 128 counterparts. There is, however, one factor worth considering when you're trying to decide whether or not to purchase CP/M products.

If you ever replace your 128 with an IBM PC, or if you use a PC in addition to your 128, there are emulators that will allow your PC to run most of your 128's CP/M products. One package, *Media Master Plus* lets a PC read MFM CP/M-formatted disks, and—with the

package's emulator, ZP/EM—run CP/M programs. No emulator will run everything, but emulators will run most CP/M software, which means your investment is not lost if you move to a PC.

WRITE

Workman & Associates
1925 East Mountain St.
Pasadena, California 91104
\$99.95

WordStar 2.26 (with MailMerge)
Public Domain Software Copying Company (PDSC)
33 Gold St.

New York, NY 10038
\$39.95

(Be sure to ask for double-density disks.)

The WORD Plus—\$150
Punctuation + Style—\$125
Oasis Systems
6160 Lusk Blvd., Suite C-206
San Diego, CA 92121

SPELL

public domain

Media Master Plus
(for the IBM PC and compatibles)
Intersecting Concepts
80 Long Ct., Suite 1A
Thousand Oaks, CA 91360
\$59

User Group Update

Mickey McLean

This list includes updated entries to our annual "Guide to Commodore User Groups," which last appeared in the May and June 1987 issues.

When writing to a user group for information, please remember to enclose a self-addressed envelope with postage that is appropriate for the country to which you're writing.

Send typed additions, corrections, and deletions for this list to:

COMPUTE! Publications

P.O. Box 5406

Greensboro, NC 27403

Attn: Commodore User Groups

User Group Notes

The **Columbus Commodore 64/128 Club** of Mississippi has moved. Its new address is 504 N. 20th St. East, Columbus, MS 39702.

The Secretary and address have changed for the **Hedland Commodore Computer Group**. David Warren is the new contact person and the address is P.O. Box 2551, South Hedland 6722, Western Australia.

New Listings

NEW JERSEY

Toms River Commodore Users Group, 981 Cedar Grove Rd., Toms River, NJ 08753

NEW MEXICO

Los Alamos Commodore Users Group, 4125-D Sycamore Dr., Los Alamos, NM 87544

WASHINGTON

Covington Commodore 64/128 Club, 26232 173 SE, Kent, WA 98042

Outside the U.S.

CANADA

Chilliwack Commodore Computer Club, P.O. Box 413, Sardis, British Columbia, Canada V2R 1A7

COLUMBIA

ComSoft Commodore User Group, D.F. Cardenas, Apartado Aereo 9872, Cali, Columbia, South America

Skate Or Die

Rodney owns the Skate Shop in the middle of the town square, but don't expect to see this tattooed dude at Chamber of Commerce luncheons. He's too busy organizing skateboard competitions for Electronic Arts. Maybe competition is too polite a word for the action that goes on outside Rodney's shop. As his son Lester says, "You don't compete, man, you skate or die!"

Check out the title screen and let Rob Hubbard's opening theme put you in the mood while you slip on your knee and elbow pads. You're going to need them. Hit the fire button, and you're in Rodney's Skate Shop. Push the *Skate or Die* pointer around with your joystick, and Rodney will give you a few skating tips.

This is where you sign up to compete. You have the option of challenging a computer opponent or, if you have two joysticks, challenging up to seven other players. Move the pointer to the clipboard and press the fire button to sign up. Then type in your name. Click on the skateboard hanging on Rodney's wall, and select your favorite board color. Click on the trophy in his shop to see who has racked up the highest scores. While you're browsing around, check out Rodney's tattoo and hair style, but don't stare at his nose. He's a little sensitive about it.

If your skating's suspect, it's highly recommended that you Go Practice when you leave the Skate Shop. Nobody keeps score, and it gives you a chance to get the feel of the board before you meet Lester and the other locals. When you're ready to jam, skate down a street that's spray painted with the event's name. You have a choice of Freestyle, Highjump, Jam, Race, Joust, and Compete All.

Once you're on a board, push the joystick forward to move in the direction you're facing. Pull back to slow down or stop, and lean the stick left or right to turn. Sounds simple, but left and right lost all meaning as I shot out of the Skate Shop, smashed into a curb, and stumbled backward into my first event.

The Freestyle Ramp is wide, smooth, and U-shaped. There's also a big crowd of people watching your every move. You get ten passes to execute

exciting kickturns, aerals, handplants, and slams. (The last is what you do if you fail any of the first three.) Hit the fire button in a "pump zone" to build up speed, put a deft hand on the joystick, and you'll be executing crowd-pleasing stunts. A word of warning: Lean the joystick with a delicate touch. Push too hard and you'll fly off the ramp and splatter in front of the crowd. If you miss a 360, you'll slide to the bottom of the ramp on your knees. (Knee and elbow pads help, but nothing soothes the ego like a perfect 720.) A click of the fire button puts you back on your board, ready to drop in again.

Handling the stunts can be pretty tricky, but the documentation explains all you need to know as long as you're willing to practice. If you get rattled and the music gets on your nerves, the

Even if you wouldn't be caught dead in baggy shorts and red tennis shoes, Skate or Die is a fun, action-packed game that's injected with a large dose of zany humor.

Commodore key toggles it off and on. (I think the music adds a nice touch, though—it compliments the action.)

You won't need much skill at the High Jump. Just move the joystick rapidly in one direction to build up your speed as you go up and down the ramp. You have five passes to see how high you can go. Hit the fire button at the highest point of your jump to record your score. You can take a breather while you're in the air, but if you don't wiggle the joystick, you'll coast to a halt. The fire button won't get you back on top this time. You've got to wiggle that stick to get out.

Try the Downhill Race when you want to practice on your own. There's no crowd this time: just you, your board, and a paved path in a park. As you race the clock, you can save time



and pick up bonus points by skating under, over, and through various obstacles. Get radical! Nobody says you have to stay on the path, but watch out for gravel, grass, and—say, is that a shark fin in the water? While you can cut the music off and on, the programmers left in the grunts, groans, and splashes that accompany your missed tricks.

Skate or Die gives you the opportunity to try out a couple of skating styles: Regular or Goofy foot. You can control your speed and direction with the joystick. A click while you're turning gives you a "slide turn," a faster way to go around corners. You can duck and jump—just remember which control is which. More than once I jumped smack into a barrier.

When you feel comfortable skating, jumping, and ducking, leave the park and head into town for a Downhill Jam. Things aren't as nice there as they were in the park. Trash cans, soda cans, open manholes, and fences get in your way. And then there's Lester.

He (or your buddy, if you have one on the other joystick) is waiting to clobber you. Click and lean the joystick in the direction you're facing to fight back with high, low, or middle kicks. Don't get so involved trying to knock Lester off his board that you skate full-speed into a chain-link fence, or you might strain yourself. (Pun intended.)

If you get past the police at the end of the run, head out to an empty swimming pool for a little Pool Joust. It's like a game of tag as you skate from one side of the pool to the other, but the one who's "it" has a boffing stick. You know what a boffing stick is—Rodney has one hanging in his shop.

If you don't have your own opponent, you can choose from the comput-



er's locals. Poseur Pete likes to comb his hair a lot and look good for the betties (women). He's supposed to go easy on you, but I still kissed a lot of concrete trying to clobber him. Aggro Eddie is pretty good competition when you've learned a trick or two. And then there's Lester.

You get five passes at your opponent, and then the stick changes hands. The first one to get three hits on the other wins. One negative note here. When I'm lying nose down in the bottom of the pool, I hate the sound the stick makes when the winner swishes it over his head in a victory celebration.

After you've had a taste of each event, go back to the Skate Shop and sign up for competition. You can go back any time by pressing the RUN/STOP key. When you're ready to show your stuff, you can go to any event you like. Top scores and standings are recorded automatically. Head for the street marked Compete All to tackle the events in sequence. Both sides of the disk are used, but the computer guides you through each of the five events with prompts.

Even if you don't know an ollie from a handplant, and you wouldn't be caught dead in baggy shorts and red tennis shoes, *Skate or Die* is a fun, action-packed game that's injected with a large dose of zany humor. The animation is good, the music is hot, and even if you are a master at backside aeriels, you're not going to slam Lester without a few hours of practice. So strap on your helmet, pull on your pads, get on that board, and do something radical!

—Tom Netsel

Skate or Die
Electronic Arts
1820 Gateway Dr.
San Mateo, CA 94404
\$29.95

The Maxx-Out Series

For software producers, a recent trend has been the establishment of an "oldies-but-goodies" line. Usually, it is combined with a new title, and the entire line sells for about half the price of the company's premiere products. This is rather like publishing paperback books after an entry has run its hard-cover course. A title can be brought back in a less expensive edition.

Besides the obvious advantage of price, this strategy serves the purpose of rescuing classic offerings and presenting them to a new generation of computer users. Previously, software was thought to have a finite shelf life. A hot title might be available for six months, but when sales slowed, no more copies were published. As a result, new computer owners never had the opportunity to purchase such early classics as *Gorf*, *Choplifter*, *Gridrunner* and others from the distant (three years ago) past.

For Epyx, it was not enough simply to buy rights to whatever was still available. The new line of games under the Maxx-Out label is unified by common themes. The first is price, with each entry carrying a suggested list price of \$24.95. Second, they are geared toward a younger audience, those in the 12- to 15-year-old bracket. Third, the releases

The Maxx-Out series is unified by common themes: price, each \$24.95; market, ages 12 to 15; and genre, arcade-style games—both classic and new releases.

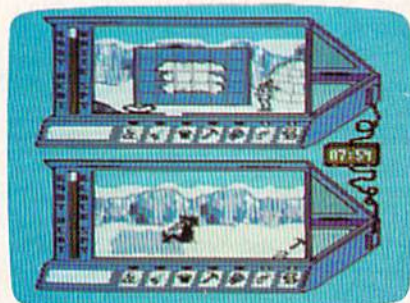
are a mixture of classics and new productions.

Launched with three titles, the Maxx-Out line is packaged in real boxes rather than plastic pegboard folders. This move allows Epyx to include real instruction books as well as literature on the rest of their line. Of the three titles, *Rad Warrior* is new, *Boulder Dash Construction Kit* is based on a classic, and *Arctic Antics* is the third release in the *Spy vs. Spy* series (the first two were originally published by First Star Software) that was inspired by characters from *Mad Magazine*.

In any event, *Arctic Antics* is a split-screen game that can be played against the computer or against a friend. The latter option requires two

joysticks. The upper screen controls the actions of the white spy, while the lower controls the actions of the black. If you've ever been a fan of *Spy vs. Spy* in any form, you'll know that each spy's primary mission is to foil the other by fair means or foul.

That goes a long way toward explaining why such a simple scenario results in a game that can be won only with difficulty and perseverance. This time, the spies are trapped on an arctic ice flow, and the only way to safety is by means of a one-man rocket under the ice. To take possession of it, you'll need to collect four critical items that are lying about, descend into the rocket's silo, and blast off.



Spy Vs. Spy III: Arctic Antics

Among the hazards are a polar bear who lives in the silo, the fast dropping of your body temperature (which can be raised by visiting an igloo), and, of course, the other spy—who is doing everything he can to stop you while implementing his own plans for being the sole survivor.

Boulder Dash was always one of the more popular incarnations of the computer maze game. *Boulder Dash Construction Kit* allows you to build your own tunnel systems if you tire of (or conquer) the 15 preexisting caves.

Played by one or two players, *Boulder Dash Construction Kit* has a scenario that seems simple: Make your way through a cave, collecting diamonds as you go, and score points.

But there are hazards, in the form of amoebas, fireflies, and boulders that are itching to kill you, and so on. Even though you have three lives, they may not be enough. Another hazard is the time clock at the top of your screen. It is counting down constantly, telling you how much time you have left to complete your journey through the cave.

Also displayed at the top of the screen are the number of diamonds to be found, the number you've collected, the value of each diamond, and your total point score. Should you do well, you'll receive an extra life for every 500

The Great Communicator

The direct-connect® Hayes and Commodore® 1670 compatible 1200 Baud modem for ONLY \$89.95

Now that you're able to do all those stand alone applications with your Commodore, like word processing, spread sheet analysis, and many others, you are probably thinking "It would sure be nice if I could expand the amount of data I have access to." You are quite right, everything from Electronic Mail (E-mail) to stock quotes and huge databases of every imaginable type is now on line to the small computer owner. You can even send and receive messages anywhere in the world. All you need is a telephone and a modem which allows your computer to communicate with others through these many services.

The next question is: "Which modem is best for me?" Let us first say that almost all modems (and services) are set up to communicate in one of three speeds; 300, 1200 and 2400 Baud.

If you look around you will find that there is a flood of 300 baud modems on the market and sometimes at very low prices. The reason is simple, they are being dumped because most computer users prefer 1200 Baud. (1200 Baud is about 4 times as fast which means you spend about 1/4 the time and money getting the data you want and more time enjoying it.)

You may also be wondering about getting a 2400 Baud modem.

2400's are great (and quite expensive), only if you have a dedicated, data-grade phone line. Here's why. The regular phone system doesn't have the signal clarity and bandwidth to support more than about 1200 baud and as a result, 2400 Baud modems will usually run at either 1200 or, on a real bad line, 300 Baud. They adapt to the worst-case line conditions and will slow transmission accordingly. Why buy a 2400 Baud modem for a lot more money when it's going to transmit at 1200 Baud most of the time anyway? (Kind of like buying a sports car then always running at lower speed).

You will also notice a few very cheap 1200s on the market at "too good to be true prices". They are. The reason is that they are either not truly Hayes and/or

Commodore 1670 compatible therefore not usable in all situations and with all services. The Arotek Minimodem-C™ is both Hayes and Commodore 1670 compatible and 1200 baud. Why not get a modem that will satisfy your present AND future needs by going directly to an inexpensive Arotek Minimodem-C™ especially when we have it on sale?

What do you get for \$89.95? Everything! You don't need to worry about cables, compatibility or anything else! We don't just sell hardware, we sell solutions. The Arotek Minimodem-C™ plugs directly into your Commodore C-64, C-64C or C-128 USER port. It is unique in that it has two separate (switchable) emulation modes (Hayes and Commodore 1670) to make it compatible with ALL available software. The



Arotek Minimodem-C™ is a full feature, 1200 Baud modem with Auto Answer, Auto Dial, Touch-Tone or rotary dialing, has the full complement of status indicators on the top panel and has a built in speaker with volume control. Just plug it into your computer and standard phone jack with the supplied cable. Minimodem™ is supplied with the very comprehensive terminal program "Multiterm" which allows you to do everything with your modem. Also

included is a free trial offer subscription to Compuserve, a very useful user database with local access numbers and about every feature imaginable.

Do you have more than one computer or do you plan to get another computer? You can "have your cake and eat it too." Simply order our Universal RS-232 Interface (#5232) or the new Com-Modem™ adapter (#5100) along with the standard Arotek Minimodem-H™ which you can use with any computer that has a RS-232 serial port as well as your Commodore. The Universal RS-232 interface can also be used to connect your Commodore to any other RS-232 device. Arotek Minimodem-C™ is tiny. Only 4 3/4" long, 2 3/4" wide and 3/4" high. The smallest yet best featured modem on the market. Order yours today!

NO RISK POLICY

Try any Arotek product for two weeks. If you are not satisfied, send it back for a prompt refund.

Now for the best part, the

MINIMODEM-C™ (for Commodore)

order #6212\$ 89.95

MINIMODEM-H™ (for RS-232 serial with DB-25)

order #6214\$ 99.95

Arotek USR-232™ (Commodore-to-Universal-RS-232)

Interface order #5232\$ 39.95

COM-MODEM™ Adapter

order #5100\$ 18.95

Modem shipping—Cont. US \$6.00, UPS Blue, CAN, AK, HI, APO \$10.00
USR-232 & adapter shipping—Cont. US \$3.00, UPS Blue, CAN, AK, HI, APO \$6.00

ORDER INFORMATION California residents add 6% tax. All prices are cash prices—VISA and MC add 3% to total. We ship the next business day on money orders, cashier's checks, and charge cards. A 14-day clearing period is required for checks. Prices subject to change—CALL. Dealer inquiries invited.

For information and in Calif. call 805/987-2454
TO ORDER CALL TOLL FREE

1 (800) 962-5800 - USA - (7-6 PST)

Or send order to:



APROTEK

DEPT.
CG

1071-A Avenida Acaso, Camarillo, CA 93010



Boulder Dash Construction Kit

points, and you'll earn extra points for time remaining on the clock when you exit the cave.

In a typical game, you'll find yourself in the upper-left corner of a brown screen, containing several chambers that are divided into two parts. You make a permanent path in the brown background as you dig your way through the cave. The object is to enter a chamber and grab the diamond. In the upper part of the chamber is a "crazed boulder" bounding off the walls. Since this is the only way in, you'll need good timing and reflexes to get past it and into the lower section that holds the diamond. Then, you'll use those same qualities to get out and go on to the next chamber.

Good luck. The action here is fast and deadly.

Rad Warrior represents the first "paperback original" in the Maxx-Out series, and it is, in essence, another maze game. As a warrior of the future, you must brave the hazards of a maze and mutant aliens who live there, as you try to get to a nuclear generator that provides the power to keep them alive.

Along the way, you'll want to pick up the flying antiradiation suit and its accessories, such as a particle negator, antigrav boots, laser, and so on. Without the suit and accessories, you won't last long against the mutants, the acid rain, the flame dragons, and all the other hazards.

With the best animation I've seen on the 64, *Rad Warrior* is full of challenge. As you begin, you are a half-clothed remnant of a resurgent race of mankind. You make your way through



Rad Warrior

a forest that is filled with a large variety of aliens and many levels which you must explore.

Send your character in the direction you wish, with the joystick, jump to new levels, crouch down to pick up an object, and throw rocks (your only weapon so far) at a host of enemies who stand in your way. When you're killed (you have three lives), your character kneels as if exhausted; a moment passes and he radiates with new life and then again stands tall and proud. With every move, the animation and the detail may surpass what you thought possible.

Nor is simply finding the antiradiation suit enough. Before you can do anything with it, you'll have to have the antigrav boots. Once you're into the suit, a strange device at the bottom of the screen comes to life. It's the suit's monitoring unit and it indicates your stamina, the energy level of the suit, and your score so far.

In choosing *Rad Warrior* to launch the Maxx-Out series, Epyx knew exactly what it was doing. In play action, animation, sound, and challenge, this is one of the best games of its type to ever appear.

Other common features of the Maxx-Out series include disks that will selfboot on the 128, and which take advantage of Epyx' FastLoad cartridge on the 64. Documentation for each begins with a comic strip introduction. In *Rad Warrior* this provides background to the story, while in *Boulder Dash Construction Kit* and *Arctic Antics*, it provides strategy hints. Following this are the usual written instructions.

As a new grouping, Maxx-Out is off to a good start with its initial selection. Further, with its consistency of packaging and its theme of providing arcade action for younger computer users, it will be a bit easier to pick up a new Maxx-Out game and have some idea of what to expect. That in itself seems a rather large benefit.

—Ervin Bobo

Maxx-Out Series

Rad Warrior

Spy vs. Spy III: Arctic Antics

Boulder Dash Construction Kit

Epyx

600 Galveston Dr.

Redwood City, CA 94063

\$24.95 each

Force 7

I've often heard it said, you can't save a man from himself. You can, however, save a man from millions of green, crab-like monsters on the planet Karis. In fact, you can save 370 humans who are kept in iron cages, for some unstated but presumably grisly purpose, by these chitinous creatures that leech soldiers' health like vampires.

And crabs aren't the only dangerous things you'll encounter in *Force 7*, the new action game for the 64 from Datasoft. On your rescue mission to the power station on the planet Karis, you'll find the floor there riddled with gaping acid holes—through which a soldier can take a fatal fall. Even passing near an acid hole will affect his or her strength. A towering green tyrannosaur (known as an alien leader) materializes out of the deck plates slaving for human flesh. Pulsating termite queens (called beating hearts) generate crab-like alien soldiers by the battalion.

Fireballs and puddles of lava follow you everywhere. Both are impossible to



destroy, but one of your soldiers can briefly neutralize them with a high-tech squirt gun called (in stereotypical military) an "automatic H₂O dispenser unit."

In the beginning of the game, you're prompted to enter your name, which is thereafter used by the game as the name of the captain and mission commander. You're in orbit over the forbidding planet of Karis. Your ship has been damaged by a planetesimal during your long interplanetary hibernation, leaving only one life-support unit for you and your crew of six.

Since there is only one life-support suit remaining, your crew members must take turns teleporting to the surface. Each member has a specialty; all but one have a weapon.

The specialties include blueprint reader, computer expert, welding expert, scientist, battle unit operator, and tactical weapons specialist. The weapons include flamethrowers, H₂O dispensers, grenade launchers, and sub-machine guns.

For some reason, weapons cannot

NBA FRANCHISES AVAILABLE: RATES REASONABLE!

(REQUIREMENTS: Knowledge of professional basketball. Capable of dealing with giants. Ability to handle high-pressure situations. Must bring own temper.)

Can YOU do the Job?

Find out if you have what it takes in **NBA**, the animated stat-based basketball game. Take control of Larry Bird, Dominique Wilkins, Michael Jordan, Kareem Abdul-Jabbar and Bob Cousey. Pick the starting line-ups, send in substitutes and call for the fast break and full-court press. **NBA** takes into account everything that occurs on court. On offense, you call the play. Choose the sequence of passes, but be careful: it increases the chance of two points, but also can lead to a steal or blocked shot. Work the outside, or just go for the three-pointer. On defense, set up outside or close to the basket, go for the rebound, or turn on the pressure and try for a steal. A good NBA coach has to work the bench as well as the floor. Each player's stamina is rated by the number of minutes he can play. Use up your starter too early in the game, and you'll have to send in a sub during those final crucial minutes, and that could turn an overwhelming victory into a closely-contested defeat.

From the designers of Super Sunday, NBA is the first and only fully-animated statistically-accurate basketball game on the market, coming in like a fast break with the following features:

- **A STAT-KEEPER PROGRAM** that allows you to keep track of how well your team is doing. This valuable accessory lets you save stats from the **NBA** game for later review. Individual players' performances and statistics are updated throughout the game. You can view them during and after the game on your screen or printer.
- **20 GREAT TEAMS** from the 1959-60 Boston Celtics to the four top teams from the 1985-86 season: Boston, Milwaukee, Houston and Los Angeles! In between are some of the greatest teams that ever played the game: the 1966-67 Philadelphia 76ers with Wilt Chamberlain and the classic match-up from the 1969-70 season between the Lakers and the New York Knicks!
- **YOUR BRILLIANT PLAY** re-enacted by all 10 players on screen.
- **THREE MODES OF PLAY:** head-to-head, solitaire and autoplay. The autoplay function also allows you to play the same teams several games in a row . . . a needed option to replay a season.



LA 1986		TIME	BOS 1986	
101	103	104	104	104
TO	PT	QUARTER	TO	PT
2	2	4	2	2
STARTING LINEUP				
LA 1986	POS	BOS 1986	POS	
J. LUCAS	F.C.	J. MCMALE	F.C.	
P. WILKINS	F.C.	P. JAMES	F.C.	
M. JORDAN	F.C.	M. JORDAN	F.C.	
K. ABDUL-JABBAR	C	K. ABDUL-JABBAR	C	
S. BERRY	G.C.	S. BERRY	G.C.	
PLAY SELECT/OUTCOME				
SHOT BY JABBAR				
NO GOOD				
DEFENSIVE REBOUND BY LUCAS				
FAST BREAK SHOT GOOD				

NBA can be played on the Apple® II family, Commodore® 64/128 or IBM® PC computers.

Price: \$39.95.

Watch for the release of Accessory disks; 1987 Season and GM Disk.

Available at leading game and computer stores
... or call TOLL FREE 1-800-638-9292
for ordering information.

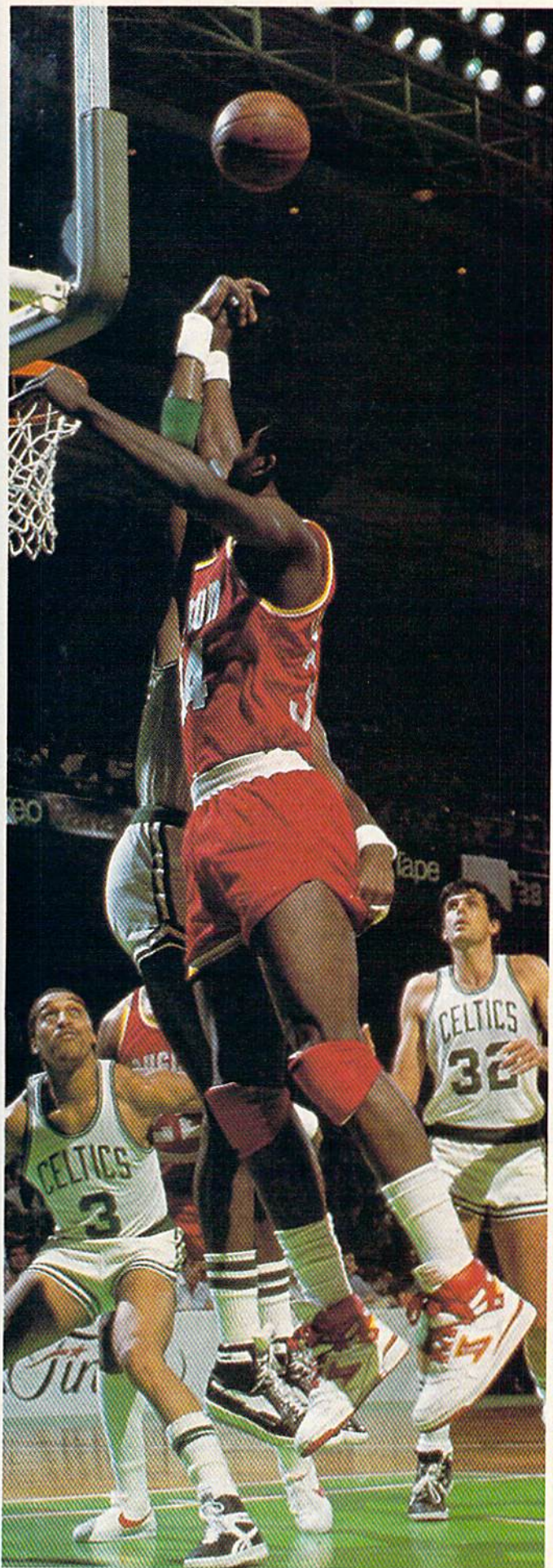


microcomputer games DIVISION

The Avalon Hill Game Company

A MONARCH AVALON, INC. COMPANY

4517 Harford Road, Baltimore, MD 21214



If anything can copy everything, this may be it!
Introducing: ★ **SUPERCARD** ★

Only a hardware copier is capable of tackling the toughies this one does. Are you having problems making back-ups of your good stuff like C. Games or S. Fighter or A. Ranger?

Not any more! With the **SUPERCARD** installed in your 1541 these programs are no threat. This small card (approximately 2" square) plugs in fast and easy with only a screwdriver—and it is software upgradable to cover new schemes. (Call for 1571 version information and price.)

SUPERCARD has done 100% of everything we tested.

\$4495

For dual drives add \$3500

be passed around among crew members. If I were in charge of a real rescue mission to Karis, and if my best machine gunner were taken out of action, I would pass the machine gun along to someone else, even if the person were not fully qualified. After all, how much training does it really take to kill crabs with a machine gun?

But that's not the way things happen on Karis. If your machine gunner is gone, and all you have left is the soldier with the super squirtgun, in she goes.

The roster of soldiers features a picture of each, along with his or her level of energy ("rested" or "dead"), weapon (if any), and area of expertise. If a soldier is destroyed by the aliens, the soldier's picture in the roster changes to a small pile of bones.

Although there is allegedly only one life support suit, it is somehow returned to service after the soldier wearing it bites the dust. How does the unit get back to the spacecraft? That part of the game was never made clear.

By pressing the f1 key, your soldiers can be teleported back to the ship when things get too hairy on Karis. The authors recommend sending an expendable soldier, a woman with no weapons, to scout the territory. Is it significant that the soldiers unambiguously identified as women (both privates) are the ones with the automatic H₂O dispenser and the ones with no weapons? There are aspects of this game that only an unregenerate sexist could love.

The challenge of high-speed action and unpredictability in Force 7 will keep the player coming back for more.

But if you can ignore that point, the game is truly first-rate. On Karis you must enter the power station (this is accomplished simply by teleporting to the planet). Choose your soldier and press the fire button. If you want to return to the ship, press f1 and you can change troopers or escape from a tricky situation. When you've chosen the right soldier for the job at hand, press the fire button to teleport back inside the power station.

A box at the bottom of the screen keeps you constantly informed of the health and energy level of the soldier, the number of humans rescued on the current level, the number remaining to be rescued, a score based on the number of aliens destroyed, and the number of rounds, grenades, and flames remaining in the soldier's private arsenal.

Pay particular attention to the soldier's health level. It's not possible to improve a soldier's health during the course of the game. Food and rest will only reduce fatigue: Health is a one-way street. Once it goes down, it stays down. The two things most likely to degrade your soldiers' health are physical contact with an alien and coming too close to an acid hole.

Within the power station, there are six different levels, each made up of rooms and hallways. Scattered throughout the various levels are battle units, food, ammunition, and black boxes.

Battle units are tiny steamrollers designed to turn the aliens into crabcakes, but they can only be driven by the two soldiers qualified to do so, and they last only a matter of seconds. Driving over a termite queen with the battle unit is one of the few ways to destroy her.

Food and rest are occasionally needed by soldiers when their fatigue level becomes dangerously high. To rest, simply find a convenient spot (such as in a magazine), and cease movement. Sleep comes almost instantly. For some reason the aliens cannot penetrate a stockpile of weapons. I suspect they're repelled by the smell of saltpeter and cordite.

★ SUPER CARTRIDGE ★

This multifunction Hacker Cartridge is our design and it is stuffed full of "Goodies"! The likes of which you may never see anywhere! It is packed full of utilities. Here is just some we plan to include:

- HesMon
- DriveMon
- Term Program
- Text Editor
- Auto Loader
- Graphic Labeler
- Calendar Maker
- Wedge Card
- Renumber
- Screen Dupe
- Fast Loader
- 1581 Burst Set
- Change Address
- Fast Error OK
- Disk Search
- Unscratch
- File Locator
- Lock Files
- Unlock Files
- Bulk Erase
- Compactor
- Uncompactor
- Auto Boot Maker (1541, 1571, 1581)
- Rapid Lock Copier
- Time Works Copier
- Data Soft Copier
- V-Max Copier
- Kernel Save
- I/O Save
- Sector Editor
- Variable Cross Ref.
- Quick Scratch

This cartridge is transparent and can be left in. It also has a reset. Over 500 blocks of programming.

\$4495

UTILITIES UNLIMITED, Inc.

12305 N.E. 152nd Street
Brush Prairie, Washington 98606

Orders taken 24 hrs. a day;
seven days a week.

If you wish to place your order by phone,
please call 206-254-6530. Add \$3.00
shipping & handling, \$2.00 for COD on
all orders. Visa, M/C accepted.
Dealer inquiries invited.

**WORLD'S BIGGEST
PROVIDER OF
C64/128
UTILITIES**

Software Submissions Invited
We are looking for HACKER STUFF: print utilities,
parameters, telecommunications, and the unusual.
We now have over 1,000 parameters in stock!

SUPER PARAMETERS 500 PAK

At a time when many programmers are cutting back on writing parameters, we are going full steam! After getting several requests for parameters on many of the "oldies but goodies" **WE DID JUST THAT! ANOTHER 1st: 500 MORE SUPER PARAMETERS** in one pack. This FANTASTIC 5-DISK SET is a value of over \$100 for less than 1/2.

\$49.95

SUPER PARAMETERS 100 PAKS: 1 thru 5 *

... YOU GET 100 OF THE BEST PARAMETERS, ANYWHERE. Professionally done, easy to use, reliable, fast and full of performance. This package can remove all protection. Includes titles from all major software publishers for the C64/128.

\$19.95 *

ALL PARAMETERS ARE TOP QUALITY—NO FILLER OR JUNK

The 'Original' Parameter Cross-Reference

Ever ask, "Is there a parameter for this program? And where do I get it?" **ASK NO MORE!** The answers are all in this book.

\$19.95 *

SIMILAR PRODUCTS MAY APPEAR ELSEWHERE LATER; JUST REMEMBER YOU SAW THEM HERE FIRST!!

SUPER NIBBLER 64/128 *

For those who need a really super nibbler copier, for those hard to backup programs, we give you the ***ULTIMATE COPY PROGRAM*** and it works well with both C64 or C128. This package includes both a Super Fast File copier and 100 parameters.

ONLY \$24.95

SUPER PARAMETERS—GEOS PAK

This #1 seller will standardize your GEOS series utilities to work with anyone else's GEOS. Parameters are included for: **FONTPACK 1, DESKPACK 1, WRITERS WORKSHOP, GEODEX & \$9.95 GEOFILE. THE ORIGINAL STANDARDIZER** for just

THE 128 SUPERCHIP—A, B or C

A (Another first!) There is an empty socket inside your 128 just waiting for our **SUPER CHIP** to give you 32k worth of great **BUILT-IN UTILITIES** all at just the **TOUCH OF A FINGER**. You get built-in features: **FILE COPIER, NIBBLER, TRACK & SECTOR EDITOR, SCREEN DUMP**, and even a 300/1200 baud **TERMINAL PROGRAM** that's 1650, 1670 and Hayes compatible. Best of all, it doesn't use up any memory. To use, simply touch a function key, and it responds to your command.

B Has super 81 utilities—a complete utility package for the 1581. Copy whole disks from 1541 or 1571 format to 1581. Many options include 1581 disk editor, drive monitor, Ram writer and will also perform many CP/M & MS-DOS utility functions.

C "C" is for combo and that's what you get. A super combination of both chips A and B in one chip, switchable at a great savings to you. **ALL CHIPS INCLUDE 100 PARAMETERS FREE!**

Chips A or B: **\$29.95 @** Chip C: **\$44.95 @**

LOCK PICK—THE BOOKS—for the C64 and C128

Lock Pick 64/128 was put together by our crack team, as a tool for those who have a desire to see the **INTERNAL WORKINGS** of a parameter. The books give you **STEP-BY-STEP INSTRUCTIONS** on breaking protection for backup of 100 popular program titles. Uses **HESMON** and **SUPEREDIT**. Instructions are so clear and precise that anyone can use it. ***OUR BOOK TWO IS NOW AVAILABLE***

BOOK 1: includes Hesmon and a disk with many utilities such as: **KERNAL SAVE, I/O SAVE, DISK LOG FILE** and lots more, all with instructions on disk. A long-time favorite of many.

BOOK 2: 100 NEW PARAMETERS, Hesmon on disk, and more utilities to include: **A GENERAL OVERVIEW ON HOW TO MAKE PARAMETERS and a DISK SCANNER.**

\$29.95 each

OR BUY BOTH FOR ONLY **\$49.95**

THE FINAL CARTRIDGE III

C-64 and C-128

THE #1 SELLING CARTRIDGE IN EUROPE! After reviewing all utilities of this type, including: Icepick, Capture, and super snap shot, we determined that **THE FINAL CARTRIDGE** is just that: **THE LAST CARTRIDGE THAT YOU WILL EVER NEED.** EXTENSIVE programming utilities for both beginner and the hardcore programmer alike. The most impressive utility for **MEMORY-TO-DISK BACKUP** that we have ever seen. We were able to copy almost every program we tried with just the **PRESS OF THE BUTTON**. Now, you may have seen a comparison of **FINAL CARTRIDGE** to super snap shot by a dealer. It is our opinion that they only printed the few items they felt were in favor (NOT ACCURATELY) and failed to list all the **FAR SUPERIOR FEATURES OF THE FINAL CARTRIDGE**. Come on guys, let's be fair. To get a much better **UNBIASED OPINION**, see great reviews of **FINAL CARTRIDGE** in:

RUN: Sept. 87, pg. 78-80: "A conventional review doesn't do *The Final Cartridge* justice—fun at this price is a rarity."

GAZ: July 87, pg. 44: "I can't begin to think of a cartridge which does so many useful things."

AHOY: Nov. 87, pg. 63: "Overall we were quite pleased."

INFO: Aug. 87, pg. 33: "I'll super hacker's cartridge!"

(NOW W/ CLOCK)

READ THEM, THEN YOU DECIDE! ONLY \$54.95

SUPER SPECIALS—PRICED TO MOVE

64 BURST ROM—get burst speed on 1571 & 1581 **\$29.95**
128 BURST ROM—Runs burst speed in 64 mode **\$35.95**
1541 Mash (for drive alignment) **\$14.95**
64 BBS: for 1 or 2 drives **\$19.95**
64 MODEM prg: w/margames auto dialer **\$14.95**
N-CODER & D-CODER: together for only **\$14.95**
GRAPHIC LABEL MAKER: the original **\$12.95**
D-COMPILE: for the famous BLITZ **\$14.95**
Parameter Cruncher **\$9.95**
HEAVY DUTY REPAIRABLE 64 POWER SUPPLIES **\$39.95**
Too many 64 repairs are due to faulty old supplies—don't wait!
CLOSE-OUT OF KRACKER-JAX 64/128 RESET BOARDS **\$3.95**
DISK NOTCHERS: double disk capacity **\$4.95**
SECURITY KEYS: lost your dongle? (Golf & bowling) **\$3.95**

V-MAX, RAPID LOCK
DIGITAL SOLUTIONS™

ADULT GAME & GRAPHICS DATA DISKS

GAME: A very unusual game to be played by a very OPEN MINDED adult. It includes a CASINO and HOUSE OF ILL REPUTE. Please, you MUST BE 18 to order EITHER ONE.
DATA *: This POPULAR disk works with PRINT SHOP and PRINT MASTER.

\$24.95 ea.

CALL or WRITE FOR FREE CATALOG.

* = AN IBM and ST VERSION IS ALSO AVAILABLE

Upon entering a black box, a soldier is immediately taken to the teleportation computer. Only the three soldiers trained in blueprint reading are able to teleport within the power station, however. The others will simply have to deal with whatever dangers lurk in the vicinity of the teleportation computer.

The soldiers who can teleport may choose to move to another level or move elsewhere on the same level. This phase of the game has the interesting added effect of allowing the player to see an entire level from a bird's-eye view. Unfortunately, you can't see the aliens or their hostages from this view, so it's entirely possible, when teleporting to a seemingly advantageous position, to arrive at a crab convention.

The winning strategy of this game is flexibility. You must keep your soldiers—as many as you can—alive for as long as possible. Some of them are excellent in a given situation. For instance, on certain levels, you'll be unable to get around without welding some acid holes shut. Send Private Brown with her welder to clear the path. If she runs into an alien leader, press f1 and send in a soldier with a machine gun. When you're beset by lava monsters and fireballs, don't hesitate to send in the soldier with the squirtgun.

This adds an interesting and dynamic element to the game—you have only a few soldiers, but their specialties are so well mixed, it takes time to learn how to make an intelligent choice among them.

This element constitutes the game's strongest point—along with the six "mappable" levels of the station. It's a game that can be mastered, but only after long hours of play. Fortunately, during those hours, the challenge of high-speed action and unpredictability will keep the player coming back for more, each time armed with more knowledge.

—Robert Bixby

Force 7
Datasoft
19808 Nordhoff Pl.
Chatsworth, CA 91311
\$19.95

Thunderchopper

Thunderchopper, for the Commodore 64, has been released. I can think of no other game or simulation with such a long wait between the first announcement and the time it appeared on dealers' shelves. By the same token, I can think of no program that spent so much time being fine-tuned. Over the past year, Colonel Jack Rosenow, president of ActionSoft and an ex-helicopter pilot, sent the programmers back to the drawing boards a number of times because he wasn't satisfied with what they had produced.

Now *Thunderchopper* is out, and I presume Colonel Rosenow is finally satisfied.

Not content to field another entry limited to search-and-destroy missions, ActionSoft chose to simulate the varied roles a helicopter performs in modern combat. As all good pilots do, you begin with *Flight Training*, in which you lift off, follow a twisting path on the

Thunderchopper simulates the various roles a helicopter performs in modern combat.

ground, and make landings on helipads and buildings. Although it isn't necessary to use this mode, you'll find the skills learned here will help you stay alive later on.

Next is *Rescue Alert*. Your mission is to find a group of downed pilots who may or may not (depending upon the skill level chosen) be broadcasting their location with an automatic direction finder. If they are, locating them is rather easy; if not, you'll have to quarter the area until you spot the men or their flares.

Finding them is only half the job: Now you'll have to lower the hoist and bring them up one at a time, being mindful of the increasing weight on your chopper; then, get them back to base safely, providing you haven't frittered away your fuel while looking for them.

Combat Alert sends you on a search-and-destroy mission, where your targets may be boats on a river, bridges, or enemy convoys. It's important to select the right weapon for the job, and your *Thunderchopper* is armed with both TOW and Stinger missiles, Zuni rockets, and a Hughes Chain Gun.

For a change of pace, try *Armed Escort*, in which you fly advance guard for a convoy of trucks as they weave



through mountain passes while trying to get back to friendly territory. Obviously, you must weave through those same passes, and you'll probably be happy you sharpened your skills in *Flight Training*.

There are snipers and other armed bodies in the hills, and to find them, you'll probably have to use the forward-looking infrared device. Toggled on or off by pressing the I key, the IR device will cause your screen to become red while all other colors of the landscape change accordingly. More than a gimmick, clusters of the enemy in the hills are revealed more clearly here than they would be otherwise.

Sea Rescue is like *Rescue Alert*—with a few exceptions. The map won't do you a great deal of good, since the sea is featureless. The men for whom you're searching are survivors of a ship sunk in a sea battle that's still winding down. Enemy ships may fire on you while you're attempting the rescue, and although you can fire back, the manual for *Thunderchopper* dryly points out that "it is not a good idea to needlessly engage battleships from a helicopter."

To get you into and out of these scrapes, *Thunderchopper* puts you in the pilot's seat of a modified Hughes 503MG Defender. Before you is a large windscreen split by a control panel that contains the usual readouts for fuel, altitude, speed, rate of climb, direction, and a clock. Because we're dealing with a helicopter, there are also gauges showing the position of cyclic, collective, and tail rotor.

Radar is of the conventional sweep type, with objects shown as little more than colored blocks. To aid in pursuit of the enemy, there's a zoom TV in the center of your console. Once your targeting devices are locked on, the zoom TV shows a magnified view of the target. It's up to you to decide whether or not the target is friendly. When not showing targets, the zoom TV constantly displays short messages reminding you of your mission.

From the function keys, you can switch screens to a map that will help you locate your target or objective; this, too, has a zoom feature. Put the cursor

COMPUTER DIRECT
Will Not Be UNDERSOLD!
AND WE MEAN IT!* Prices Expire 3-31-88

Apple® Compatible Complete System

Computer, Drive, Monitor, Printer & Software

Sale Price
\$499⁹⁵

List \$1228 (Add \$35.00 shipping.)*



- Laser 128K Computer
Video, Parallel & Serial Ports
Runs Virtually All of the
Apple II/IIc/IIe Software
- Hi Res 12" Monochrome Monitor
- Genuine IBM 8 1/2" Printer With Interface And Paper
- Software: Word Processor, Spreadsheet & Data Entry

Apple® is the registered trademark of Apple Computers Inc.

**No One Sells
This System
For Less!**

Printer and
Color Monitor
Options
Available

Professional IBM® XT Compatible System

Computer, Drive, Monitor, Printer & Software

Sale Price
\$649⁹⁵

List \$2495 (Add \$35.00 shipping.)*



- 15 MHz (Norton CI Rating)
- 512K Professional XT Computer
4.77/8 MHz; Clock/Calendar;
Parallel, Serial And Game Ports
- MS DOS 3.2 & G.W. Basic Included
- Hi-Res 12" Monochrome Monitor
- Genuine IBM 8 1/2" Printer with Interface And Paper
- Software: Word Processor, Spreadsheet & Data Base

IBM® is the registered trademark of International Business Machines, Inc.

**No One Sells
This System
For Less!**

Commodore® 64c Complete System

Computer, Drive, Monitor, Printer & Software

Sale Price
\$395⁹⁵

List \$1045 (Add \$35.00 shipping.)*



- Commodore C-64c Computer
- Ecelerator Plus Disk Drive
- Hi Res 12" Monochrome Monitor
With Connecting Cables
- Genuine IBM 8 1/2" Printer
With Interface And Paper
- GEOS Software: Word Processor And Drawing Program

Commodore® is the registered trademark of Commodore Business Machines Inc.

**No One Sells
This System
For Less!**

Super Turbo IBM® XT Compatible System

Computer, Drive, Monitor, Printer & Software

Sale Price
\$599⁹⁵

List \$2495 (Add \$35.00 shipping.)*



- 10 MHz / 512K Super Turbo
IBM® XT Compatible Computer
Video, Parallel, And Serial
Cards Included
- MS DOS 3.2 & G.W. Basic Included
- Hi-Res 12" Monochrome Monitor
- Genuine IBM 8 1/2" Printer with Interface And Paper
- Software: Word Processor, Spreadsheet & Data Base

IBM® is the registered trademark of International Business Machines, Inc.

**No One Sells
This System
For Less!**

15 Day Home Trial • 90 Day Immediate Replacement Policy

COMPUTER DIRECT
 22292 N. Pepper Rd, Barrington, IL. 60010
 Call (312) 382-5050 To Order!

* Illinois residents add 6 1/4% sales tax. All orders must be in U.S. Dollars. We ship to all points in the U.S., CANADA, PUERTO RICO, & APO-FPO. Please call for charges outside continental U.S. or C.O.D. MAIL ORDERS: enclose cashier check, money order, or personal check. Allow 14 days delivery, 2 to 7 days for phone orders and 1 day express mail. Prices and availability subject to change without notice. Shipping and handling charges are not refundable. (Monitors only shipped in continental U.S.) COMPUTER DIRECT will match any valid nationally advertised delivered price on the exact same product with a comparable payment method (excluding any applicable sales taxes). A physical copy order of the current valid lower priced ad must be supplied with the order, or within 15 days of date of purchase. VISA — MASTERCARD — C.O.D.

COMPUTER DIRECT
Will Not Be UNDERSOLD!
AND WE MEAN IT!*

Prices Expire 3-31-88

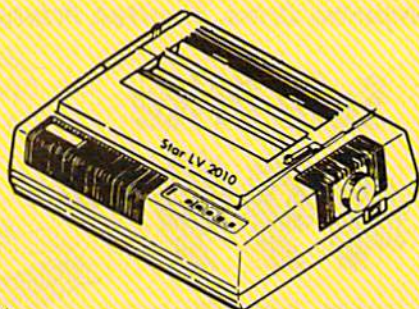
Super Hi-Speed Printer

200 CPS Star Micronics LV-2010 With Crisp Near Letter Quality

Sale \$199⁹⁵

(Add \$10.00 shipping.)*

List \$499



No One Sells This Printer For Less!

- 200 CPS Draft - 45 CPS Near Letter Quality
- Serial Impact Dot Matrix
- IBM Compatible
- Continuous Underline
- Near Letter Quality Mode
- Ultra High Resolution Bit Image Graphics
- Pull Tractor & Automatic Single Sheet Loading
- Standard Serial & Centronics Parallel Ports



Ultra Hi-Speed (300 CPS) Printer

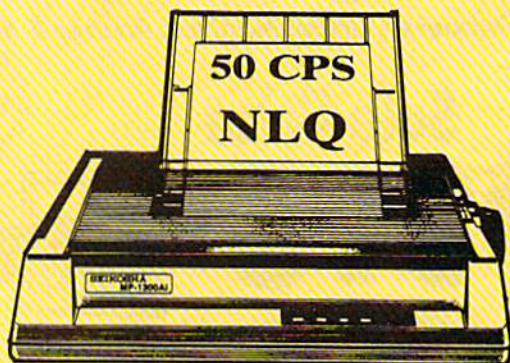
300 CPS Draft • 50 CPS NLQ • With Color Printing Capabilities

No One Sells This Printer For Less!

Sale \$299⁹⁵

(Add \$10.00 shipping.)*

List \$499



- 300 CPS Draft - 50 CPS Near Letter Quality
- Front Panel Margin Setting
- Download Character Setting
- Epson/IBM Modes • 10K Buffer
- Variety Of Characters & Graphics
- Parallel & Serial Interface Ports
- Auto Paper Load & Ejection • Bottom Feed
- **Optional 7-Color Printing Kit... Sale \$99.95**



15 Day Home Trial • 90 Day Immediate Replacement Policy

COMPUTER DIRECT
22292 N. Pepper Rd, Barrington, IL. 60010
Call (312) 382-5050 To Order!

* Illinois residents add 6 1/4% sales tax. All orders must be in U.S. Dollars. We ship to all points in the U.S., CANADA, PUERTO RICO, & APO-FPO. Please call for charges outside continental U.S. or C.O.D. MAIL ORDERS: enclose cashier check, money order, or personal check. Allow 14 days delivery, 2 to 7 days for phone orders and 1 day express mail. Prices and availability subject to change without notice. Shipping and handling charges are not refundable. (Monitors only shipped in continental U.S.) COMPUTER DIRECT will match any valid nationally advertised delivered price on the exact same product with a comparable payment method (excluding any applicable sales taxes). A physical copy order of the current valid lower priced ad must be supplied with the order, or within 15 days of date of purchase. VISA — MASTERCARD — C.O.D.

COMPUTER DIRECT
Is 1st In PRICE, SUPPORT, & GUARANTEE!
WE LOVE OUR CUSTOMERS! Prices Expire 3-31-88

Genuine IBM® 8½" Printer

8½" Letter Size • 80 Column • Limited Quantities

Sale \$49⁹⁵

(Add \$7.50 shipping. *)

List \$199



No One Sells This Printer For Less!

- Unbelievable Low Price
- Advanced Dot Matrix - Heat Transfer
- Upper & Lower Case (With True Lower Descenders)
- Underline • Enlarged
- Graphics With Commodore, Apple & Atari Interfaces
- Ready to Hook Up To Serial Port Of IBM® PCjr
- Low Cost Adapters For IBM®, Apple, Commodore, Laser, & Atari Computers



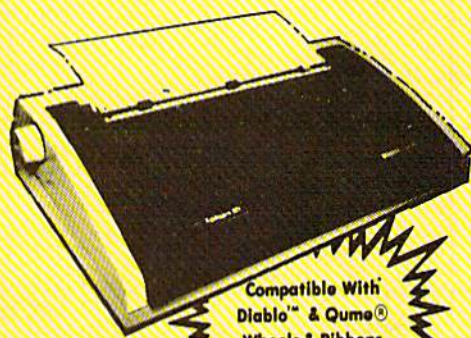
22 CPS Daisy Wheel Printer

13" Daisy Wheel Printer With True Letter Quality

Sale \$99⁹⁵

(Add \$10.00 shipping. *)

List \$499



No One Sells This Printer For Less!

- Daisy Wheel Printing With True Letter Quality
- 22 CPS, AAA Text
- Below Wholesale Cost
- 13" Wide Carriage
- Both Daisy Print Wheel & Ribbons Compatible with Diablo™ & Qume®
- Single Sheet or Continuous Feed
- Low Cost Interfaces Available

Compatible With
Diablo™ & Qume®
Wheels & Ribbons



Call

15 Day Home Trial • 90 Day Immediate Replacement Policy

(312) 382-5050

We Love Our Customers!



Mail

COMPUTER DIRECT
22292 N. Pepper Road
Barrington, IL. 60010

over a suspected object and then use up to 16X magnification to help with identification. (A word of warning here: You must press RETURN to get back to your pilot's view after using the map. Since this is the same key that controls weapons selection, it will change your current selection while changing your mode.)

Further help is available by switching to a status screen. You're shown several views of your craft on a graph-paper background, with damage sustained indicated. You can also get a mission evaluation at any time by pressing the f7 key, but you probably won't want to. Unless you've completed your mission, the message will be less than encouraging.

Thunderchopper's graphics and sound are good. The graphics, licensed from subLogic, are of the 3-D type. Images are solid rather than wire-frame, which gives a greater illusion of reality. I also appreciate the fact that control is managed by either keyboard or joystick.

Everything you need to know to enjoy the simulation is contained in the manual and on the quick-reference card. While the manual is entertaining, it does sometimes slip into shop talk. Since it was written by Colonel Rosenow, this is probably forgivable.

In its action and in the variety of challenges it offers, *Thunderchopper* succeeds. Helicopter simulators are proliferating at a pace that will soon move them out of the general category of flight simulators and into their own specialized realm. I think *Thunderchopper* is a welcome addition to the field.

—Ervin Bobo

Thunderchopper
ActionSoft
122-4 Race St.
Urbana, IL 61801
\$29.95

Commodore 1581 Disk Drive

The new Commodore 1581 disk drive brings the world of 3½-inch disks to the users of Commodore 64 and 128 personal computers. The 3½-inch disk is already the standard medium for the Macintosh, Amiga, Atari ST, and the new IBM PS/2 computers. Additionally, the smaller floppy is quickly becoming the preferred medium for the IBM XT/AT computers and their clones. The 3½-inch disk's advantages over a 5¼-inch disk include a more convenient size (it will fit in a shirt pocket), much larger storage capacity, and a hard plastic case and shutter mechanism that keeps the disk clean and free from accidental damage.

Whether the advantages of the 3½-inch disk are of sufficient interest to Commodore 64 and 128 users depends upon the needs of each particular user. Clearly, the 1581 will not replace the 1541 or 1571 (5¼-inch) drives. Nearly all commercial software available for the 64 and 128 computers are on 5¼-inch disks, and the vast majority will continue to be sold on such media. However, the combination of a 1581 drive and 1541 or 1571 drive significantly increases the data storage capability and performance of a 64 or 128 user's computer system.

The 1581 drive is petite—2.6 inches high, 6 inches wide and 9.5 inches deep. Its small footprint is attributed to an external power supply that accompanies the drive and is approximately the same size and shape of the Commodore 64 power supply. Some users may be irritated by having a separate power unit for the drive, but I prefer having the external power source because of the space it saves on my cramped work area.

The drive, like both the 1541 and 1571 drives, connects to the serial port on the 64 or 128 and has twin serial ports for daisy-chaining with your other

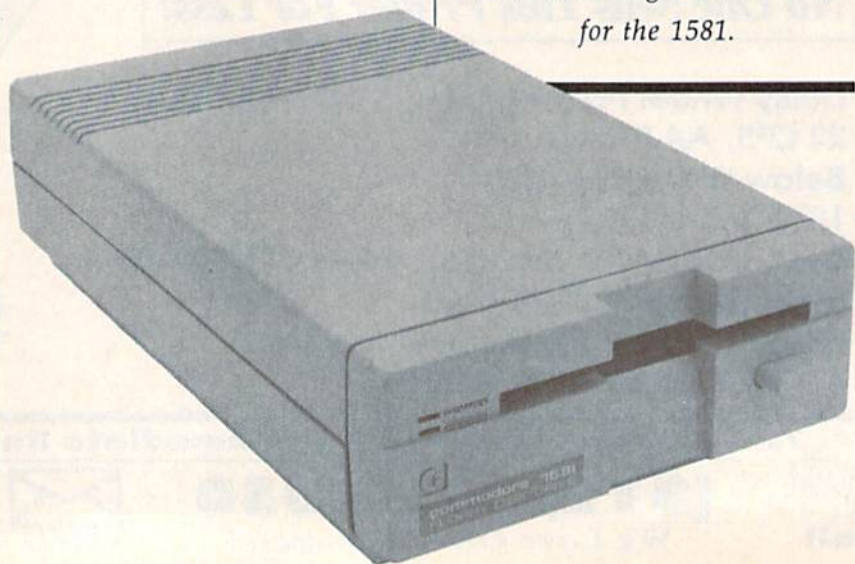
drives and printer. A nice improvement that Commodore included on the 1581, as was included on the 1571 drive, is a DIP switch on the back of the unit that permits the user to change the device number. As most 64 owners are painfully aware of, a device change on the 1541 requires opening the case and doing a "cut and solder" job. The inclusion of a DIP switch, however, could have been more convenient had the switch been placed on the front of the drive.

The capabilities of the 1581 drive are impressive. The drive uses double-sided 3½-inch floppies and provides 800K of storage capacity. To 64 and 128 users, this means a whopping 3160 blocks of space. The data on almost five single-sided 5¼-inch disks can be stored on a single 3½-inch disk for the 1581.

A directory on a 1581 disk can hold a maximum of 296 files, as opposed to the 144-file maximum on the directory of a 1541 or 1571 disk. In order to handle the potential size of the directory for 800K of data, Commodore has expanded the DOS for the 1581 to support sub-directories. With the use of a new file type called CBM, a user can create partitions on a disk, with each partition having its own directory. Through the use of partitions, a user can create separate directories for his or her word processing files, basic programs, utilities, graphics, and so on.

The 1581 drive supports the "burst" mode available on a Commodore 128, thereby providing significant data transfer speed over the 1541 drive. In fact, the "burst" mode on the 1581 is

The data on almost five single-sided 5¼-inch disks can be stored on a single 3½-inch disk for the 1581.



ALL NEW

It's Finally Here!

Can't find that magazine article you need? Don't waste your time digging through piles of back-issues! Find it **fast** in the

1987 Haynes Index FOR Compute!'s Gazette!

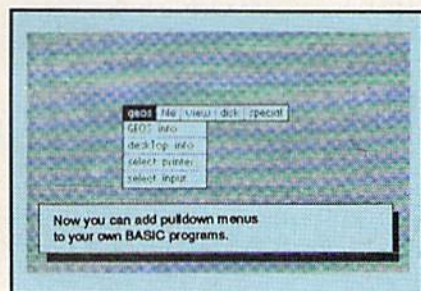
Every issue of Compute!'s Gazette is packed with valuable information. The trouble is, it's hard to find when you need it. But now the Haynes Index lets you find it in **seconds**! It's the **only** fully cross-referenced index to **every** article, tip, program and review published during 1987! Everything from "Accounting Software" to "XModem" and then some! Make every issue work for you! Get the Haynes Index today! Send \$7.95 (California residents add 6% sales tax) to:

Haynes Publishing

9420 Reseda Blvd., Suite 422-A Northridge, CA 91324
SATISFACTION ALWAYS GUARANTEED!

Make **GEOS**TM work for you.

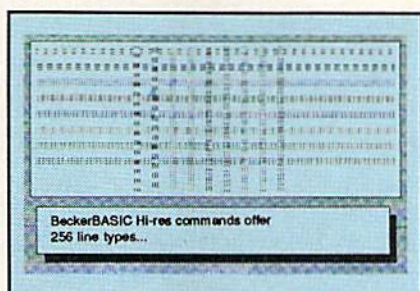
Introducing BeckerBASIC — Now you can write BASIC applications to work with GEOS.



Introducing **BeckerBASIC**. If you already know BASIC, you can now write your own GEOS applications in BASIC, easily.

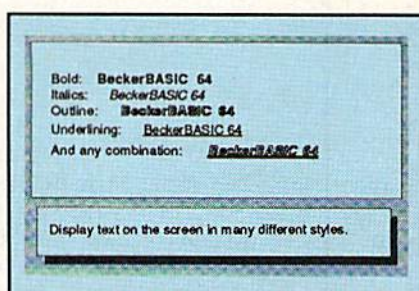
BeckerBASIC gives you the power of over 270 new commands and functions.

Over 20 commands to make



your programming easier. For example, TRACE, RENUMBER, DUMP, DIR, etc.

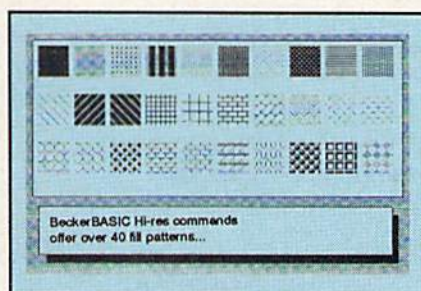
Packed with over 50 commands for easy disk access. Load and save blocks of memory or selected lines of your program. You can even PEEK and POKE into your



disk drive's memory.

10 commands can be used for easier cursor control. Turn the cursor on and off. Set how quickly it flashes. Set it to any location on the screen.

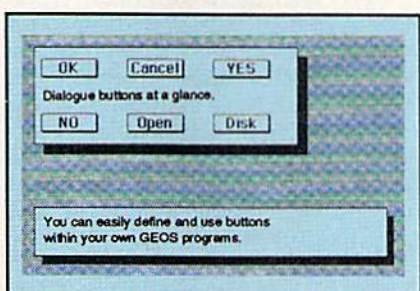
20 commands are available for all your Hi-res programming needs.



Create boxes, plot points, and draw lines.

18 commands alone are dedicated to creating sound. Set ring modulation, change the filter, alter the waveform and set the envelope.

Over 35 commands let you



create and animate sprites with ease. Load and save sprites directly. Alter their size, change their positions and check for collisions. Use the sprite editor to create sprites and icons.

Use the *Pulldown Menu Construction Set* and *Dialog Box*



Construction Set to aid in the creation of your own applications. Royalty-free distribution of your **BeckerBASIC** applications.

Now anyone can create applications in BASIC to run with GEOS. Only \$49.95

Call today or mail the coupon for your free catalog covering our complete line of software and books for the Commodore 64 and 128. Or ask for the location of the dealer nearest you. You can order direct by phone using your VISA, American Express or MasterCard or detach and mail your completed coupon. Dealer inquiries welcome—over 2400 nationwide.

Abacus

Dept. G3 • 5370 52nd Street SE
Grand Rapids, MI 49508
Telex 709-101 • FAX 616/698-0325
Phone 616/698-0330

GEOS is a trademark of Berkeley Software.
Commodore is a trademark of Commodore Electronics Ltd.

Yes! Please rush me _____ copies of BeckerBASIC at \$49.95 each plus \$4.00 for shipping a handling (Foreign include \$12.00 per item). MI residents include 4% sales tax.

Payment: VISA MC AMEX Check Money Order
Card No. _____ Exp. _____
Name _____
Address _____
City _____ State _____ Zip _____
Phone No. (____) _____

☐ Please send me a free catalog of your complete line of Commodore software and books.

To order, mail this coupon or call:

(616) 698-0330

Abacus • 5370 52nd Street • Grand Rapids, MI • 49508

G3

Figure 1: Benchmark

Program	Size (blocks)	1541	Load Time (sec.)		
			1581 (64 Mode)	1571	1581 (128 Mode)
Yahtzee	47	33	24	8	5
Monopole-4	118	119	60	12	8

Figure 2: Benchmark

Program	Size (blocks)	1541	Load Time (sec.)	
			1581 (w/Zapload 64)	
Yahtzee	47	33	8	
Monopole-4	118	119	25	

about 50-percent faster than the first mode on the 1571. While the "burst" mode is not available on a 64, the 1581 still has some speed advantages over the 1541. The results in Figure 1 below demonstrate the loading capabilities of the 1581 with respect to a couple of basic programs.

The 1581 also possesses an 8K track cache buffer, which further improves drive access speed. With the track cache buffer, the drive stores the last 8K of information previously accessed on the drive. If that information is accessed again by the user, the drive retrieves the information from the buffer instead of looking for that information on the disk. An impressive demonstration of the advantages of the buffer is shown by requesting it again. The second request elicits a directory listing before you can get your finger off the RETURN key.

The 1581 drive uses the MFM format instead of the GCR format employed by the 1541 and 1571 drives. The format uses 80 tracks with 40 sectors per track. It is similar to those formats used by IBM PC and CP/M computers. It is flexible and provides a bridge for data transfer between 64 and 128 computers and IBM, CP/M, and other MFM format computers such as the Amiga. However, the employment of the MFM disk format affects the drives compatibility with software currently available for the 64 and 128. Many commercial software products take advantage of the GCR code and the ROM of the 1541 and 1571, to increase the program's loading speed or to provide disk copy protection. Those products, therefore, will not successfully load from a 1581 disk. To illustrate this problem, my attempts to load and run *BobsTerm Pro 128* and *Fleet System 4* after copying them to a 1581 disk were unsuccessful.

Formatting compatibility between the 1581 and the 1541 also hinders file copying between the two drives. The Test/Demo disk provided with the 1581 comes with several utility programs that will copy files between a

1541 or 1571 and the 1581 drive. A commercial program called *The 128 Cannon*, from Kracker Jax, also supports the 1581 drive. The file copier on *The 128 Cannon* is faster than the one provided on the Test/Demo disk. Currently, however, no whole disk copy programs are available that will copy the entire contents of a 1541 or 1571 disk to a 1581 disk, or vice versa.

A significant consideration for Commodore 64 users is the speed of the 1581. Without the "burst" mode, the 1581 drive transfers data at a much slower rate, although still faster than the 1541. Fast-load programs or cartridges, such as Access' *Mach 128* or Epyx's *Fastload* cartridges, do not work with the 1581, since those programs modify the GCR code used on the 1541 and 1571 drives. In anticipation of this problem, Commodore has included a utility program on the Test/Demo disk called *Zapload 64*. With *Zapload 64*, a user can significantly increase the loading time for many 64 programs, as shown by the test results set forth in Figure 2 below. However, *Zapload 64* is not very compatible with commercial software. After numerous attempts to load commercial 64 programs with *Zapload 64*, it appears that any program that is composed of more than one file does not work with *Zapload 64*. The utility's practical value, therefore, is limited to BASIC programs. A company called Chip Level Designs is reportedly developing new chips for the 64 and 128 (in 64 mode) that permit support of the "burst" mode of the 1571 and 1581 drives.

For 128 users, the 1581 drive supports CP/M mode, if you obtain an upgrade of the CP/M+ system file. By writing Commodore and sending them \$19.95, Commodore will send you a new CP/M+ system disk that will support the drive. Of possibly greater significance, however, the 1581 drive is fully supported by *GEOS 128* from Berkeley Softworks. The increased storage capacity and disk-access speed makes *GEOS 128* a much more satisfactory and viable operating system. Unfortunately, *GEOS 64* does not currently

support the 1581 drive.

The Test/Demo disk accompanying the drive contains many disk utilities that will be recognized by owners of a 1541 or 1571 drive. In addition, the Test/Demo disk contains *Zapload 64*, as well as a partition aid program to help you create sub-directories, and it contains a very impressive slide show. The graphics comprising the slide show is hidden in a subdirectory on the Test/Demo disk. The speed of transferring between graphics screens in the 128 mode is very impressive and provides a good showcase of the drive's capabilities.

In summary, the drive has outstanding storage and speed capabilities, which most 64 and 128 users will find useful and valuable. While the drive will be more attractive to the 128 user (because of the "burst" mode speed capabilities), it should still be seriously considered by 64 users. The drive lists for \$300, but can be found at a price less than the cost of a 1571. With 800K of storage space, using the 1581 drive as a data storage device alone should make it worth its price to 64 and 128 users; therefore, I highly recommend it to both.

—Scott Thomas

Commodore 1581 Disk Drive
Commodore Business Machines
1200 Wilson Dr.
West Chester PA 19380

COMPUTE!'s Gazette Subscriber Services

Please help us serve you better. If you need to contact us for any of the reasons listed below, write to us at:

COMPUTE!'s Gazette
P.O. Box 10957
Des Moines, IA 50340

or call the Toll Free number listed below.

Change of Address. Please allow us 6-8 weeks to effect the change; send your current mailing label along with your new address.

Renewal. Should you wish to renew your Gazette subscription before we remind you to, send your current mailing label with payment or charge number, or call the Toll Free number listed below.

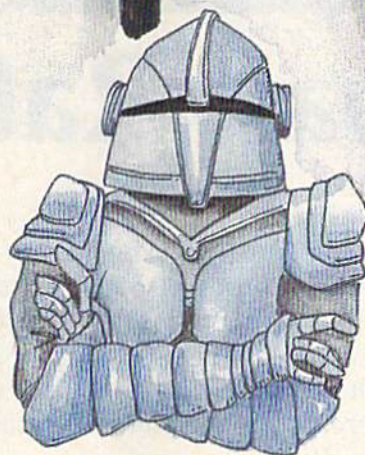
New Subscription. A one-year (12-month) U.S. subscription to *COMPUTE!'s Gazette* is \$24 (2 years, \$45; 3 years, \$65). For subscription rates outside the U.S., see staff page. Send us your name and address or call the Toll Free number listed below.

Delivery Problems. If you receive duplicate issues of *COMPUTE!'s Gazette*, if you experience late delivery, or if you have problems with your subscription, please call the Toll Free number listed below.

COMPUTE!'s Gazette
1-800-727-6937

Oil Defense

Mark H. Thomas



Whether it's in Texas or the Persian Gulf, oil is a treasured and well-defended commodity. In this arcade-action game for the 64, the oil craze has reached interplanetary proportions, forcing you to protect three tanks of "black gold" from the nightly raids of oil-thirsty aliens. A joystick is required.

After depleting their entire planet of its crude oil, the Martian population decided to look elsewhere for this precious energy source. Unfortunately, they found Earth. To rebuild their planet's oil reserves, Mars dispatches nightly raids on Earth's three largest oil tanks. You're armed with a mobile antialien gun, and your job is to defend these tanks—a difficult, but vital assignment.

Getting Started

"Oil Defense" is written entirely in machine language, so you need to enter the program using "MLX," the machine language entry program found elsewhere in this issue. Enter the following values when prompted:

Starting address: 0801
Ending address: 1720

After you have typed in Oil Defense, save a copy to tape or disk. Oil Defense is loaded and run just like a BASIC program. To play, you must plug a joystick into port 2.

Texas Tea Party

The Martian invaders begin with an attack force of ten flying saucers. These saucers do not have any

weapons or defense systems. They are designed for one purpose only: to swoop down and siphon the oil from storage tanks, immediately transporting the ill-gotten "Texas tea" to their mother ship in outer space. Your only defense is to shoot these saucers out of the sky before all of the oil is sucked away.



Before the peaceful backdrop of a city's night skyline, a fierce battle is fought over oil.

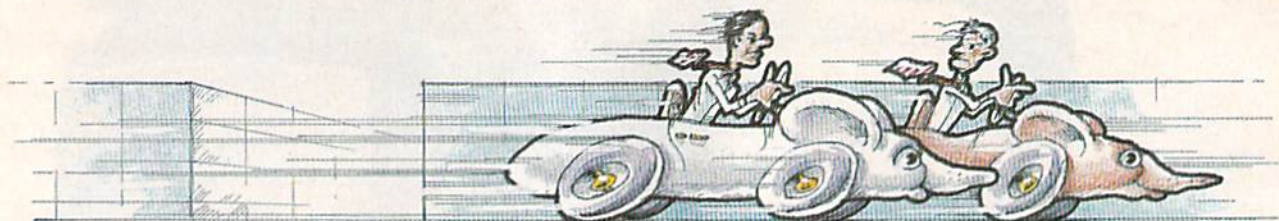
On a ramp built outside the oil tanks is a mobile anti-alien gun for blasting oil-thieving invaders. Using your joystick, you can move the gun left or right along the track and fire. Your gun is equipped with a special laser-tracking device, which allows you to steer your

shots. After a shot is fired, moving your gun left and right also moves the shot.

The Martians are shrewd pilots: They avoid staying in one place too long and never keep their entire fleet on the screen at one time. Occasionally, a ship dives down towards your gun. If the Martian makes contact with your gun, it taxes your energy, making you move slower. Too many encounters completely drain your energy cells, stopping you dead in your tracks. After a while, your batteries recharge, but it's best to avoid any contact with the alien vessels.

Once you have shot down all of the invaders, another attack force is sent in. (The computer prompts you to press a key between invasions.) Each new wave has five more alien ships than before. The game ends when all of the oil is gone. All three oil tanks are visible, so you can watch as your supply slowly diminishes.

On the bottom right of the screen is the number of alien ships left alive. The bottom left displays your score. The more aliens you shoot and the longer you hold on to your oil, the higher your score. You may pause the game by pressing any key other than RUN/STOP. Resume by pressing a key again. To return to BASIC, press the RUN/STOP key; you may have to press it twice before the game ends. See program listing on page 83. @



Human Rat Race

Roger Hughes

This exciting two-player maze game is really two games in one. In the first variation, you race against an opponent and dangerous drones to reach the other side of a maze safely. In the second, you collect gold and try to get rich before time runs out—or else the drones will cash in your chips. And, as a special challenge to the arcade veterans, try the invisible maze variation. For the 64 with two joysticks.

You're racing through a maze with a sack of gold—running, twisting, turning. Oh no, another dead end. You retrace your steps and hear the clock ticking—six, five, four. . . . You see a deadly drone on your left. Can you get past it? Barely. Three, two. . . . You see the exit and your path is clear—or is it? You make a mad dash and escape with your gold just as time runs out. Is this a scene from *Raiders of the Lost Ark*? No, it's "Human Rat Race," an exciting maze game for two players.

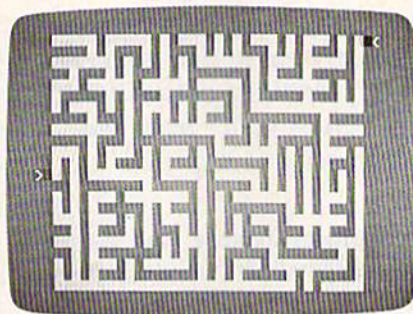
In Human Rat Race, you and a friend battle against each other and a group of drones—you decide how many—to either reach the other side of the maze or to collect gold, cash it in, and get rich before time runs out. If that's not tough enough for you, you can make the maze invisible.

Getting Started

Since Human Rat Race is written in machine language, you'll need to enter it with "MLX," the machine language entry program found elsewhere in this issue. When you run MLX, you'll be asked for the starting address and ending address of the data you'll be entering. Here are the values to use for Human Rat Race.

Starting address: C000
Ending address: CBBF

Follow the MLX instructions carefully and be sure to save a copy of the Human Rat Race data when you finish typing. To load Human Rat Race, type LOAD "file-



Not just another maze game, "Human Rat Race" includes a number of variations that make it a challenge for players of all skill levels.

name", 8,1 for disk or LOAD "filename", 1,1 for tape, where filename is the name you used when you saved the program from MLX. Now type SYS 49152 to play the game.

Choice Of Games

When you first run Human Rat Race, you'll see the title screen and a game menu. You can use the function keys to create the specific variation of the game you want to play. With f1 you can choose to play either the "Race to the Other Side" or the "Grab the Gold" variation.

In "Race to the Other Side," you and a friend race through a maze with only one route across. The first player to reach the other's starting square—indicated on the screen by an arrow—is the winner. In "Grab the Gold," the maze is filled with gold, and you and a friend collect and cash in as much

as you can. To collect gold, you simply move through the maze, automatically collecting ounces of the precious metal as you travel along each new path.

The amount of gold you're carrying is displayed at the top of the screen on the same side of the maze as your home square. To sell your gold, you must return to your home square. The gold's price—indicated at the bottom center of the screen—begins at \$500 an ounce and decreases during the play of the game by five dollars each second. Each player's accumulated wealth is shown at the bottom of the screen on his or her side. At the end of one minute, the player who has cashed in the most gold wins.

If you're the adventurous type, you can use f3 to make the maze invisible. When this option is selected, both you and your opponent must navigate the maze by feeling your way around—quite a challenge.

Choosing f5 lets you specify the number of drones—from 0 to 15—you want to have patrolling the maze. These drones move erratically, making it difficult for you or your opponent to get through. If you hit a drone, you return to your home square. In "Grab the Gold," you also lose all the gold you're carrying.

To start the game, press f7. It takes about six seconds for the computer to generate the maze. The blue player uses the joystick plugged into port 1 and always starts on the left side of the maze; the red player uses port 2 and starts on the right. At any time during play, you can press f1 to end the game and show the maze if it was invisible. Pressing f1 again returns you to the title screen.

See program listing on page 88. ■

COPY II[®] 64/128

**NEW
Version
3.1**

BACKUP PROTECTED SOFTWARE FAST.

From the team who brought you Copy II for the Apple, the Macintosh and the IBM comes a revolutionary new copy program for the Commodore 64/128 computers.

- Copies many protected programs — automatically. (We update Copy II 64/128 regularly to handle new protections; you as a registered owner may update at any time for \$15 plus \$3 s/h.)
- Copies even protected disks in under 2 minutes (single drive).
- Copies even protected disks in under 1 minute (dual drive).
- Maximum of four disk swaps on a single drive.

- Includes fast loader, 12-second format.

Requires a Commodore 64 or 128 computer with one or two 1541 or 1571 drives.

Call 503/244-5782, M - F, 8 - 5, (West Coast time) with your  in hand. Or send a check for \$39.95 U.S. plus \$3 s/h, \$8 overseas.

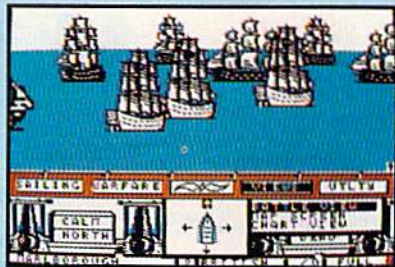
\$39.95

Central Point Software, Inc.
9700 S.W. Capitol Hwy. #100
Portland, OR 97219

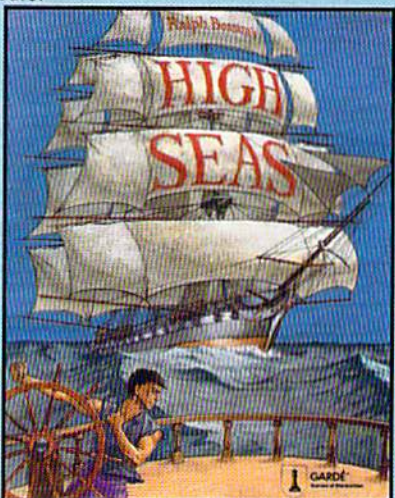
*Central Point
Software*
INCORPORATED

Call for a catalog of our full product line.

This product is provided for the purpose of enabling you to make archival copies only.



From the crow's nest, your topman bellows, "Enemy ship ahoy!" You immediately order battle sails, your guns loaded and prepared to fire. You change your course in anticipation of your enemy's next move. Now, the wind is in your favor, and so is lady luck. Before the enemy captain can bring the ship about, you level a broadside amidship; crushing her main mast, taking sails and rigging down with it. She's dead in the water gunports blocked by the fallen mast and sails. Your next broadside explodes into her hull, ravaging her decks; then another until finally, she strikes her colors. The prize is yours.



High Seas is an exciting, fast-paced action simulation that puts you in command of the most powerful ships that ever moved under sail.

Here's what Neil Shaprio has to say from the November 87 issue of Nibble

"Now he's done it again-better than I for one, even imagined it could be done"

"The first time you play a multi-ship scenario and see the opposing fleet arrayed in line, full sail against you, it's an unforgettable experience"

Available at your local retailer

OR ORDER

1-800-367-1435

**\$49.95 APPLE // w/64k, //e, //c, //gs
Commodore 64/128**



Gardé[®]
Games of Distinction
8 Bishop Lane, Madison, CT. 06443

COMMODORE SPECIAL



MW-350 PRINTER INTERFACE
2K BUFFER \$49.95
10K BUFFER \$59.95
SPECIAL 8K BUFFER UPGRADE
\$8.95
ROM UPGRADE FOR OLDER
MW-350 1.9 ROM
\$6.50

CBM 64/128

C64C	\$169.00
C1541C	\$175.00
1581 3.5 DRIVE	\$CALL
1351 MOUSE	\$35.00
C1660 MODEM	\$35.00
C1670 MODEM	\$SAVE
1764 RAM	\$115.00
1802C MONITOR	\$189.95
C128	\$CALL
C128D	\$435.00
1571 DISK	\$215.00
1700 RAM "128K"	\$105.00
1750 RAM "512K"	\$CALL

CBM 64 POWER SUPPLIES

REPAIRABLE \$39.95
NON-REPAIRABLE \$29.95



MW-401 40/80 COLUMN
CABLE FOR THE CBM128
\$29.95
MW-232 RS 232 INTERFACE
FOR 64/128 \$29.95

MW-611 UNIVERSAL I/O BOARD FOR THE C64/C128



16 ANALOG INPUTS
16 DISCRETE OUTPUTS
1 ANALOG OUTPUT
1 EPROM SOCKET
PROTOTYPING AREA

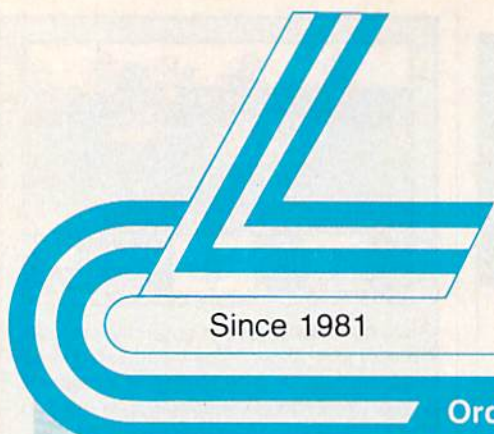
64 SOFTWARE

CHAMPIONSHIP
BASEBALL \$14.95
ALIENS \$14.95
GHOSTBUSTERS \$14.95
ROAD RACE \$14.95
ELECTON. ARTS \$CALL
ALL OTHERS \$CALL

AMIGA

AMIGA 2000
BRIDGE BOARD \$CALL
MEMORY \$CALL
EXTRA DRIVES \$CALL
MONITOR \$CALL
AMIGA 500
MONITOR \$CALL

MICRO WORLD ELECTRONIX SALES 1-800-288-8088
SUPPORT 303-988-5907 ALL PRICES SUBJECT TO CHANGE

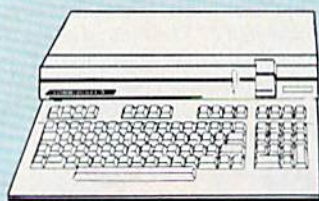


Lycos Computer Marketing & Consultants

Order processed within 24 hours.

COMMODORE

128D
System



\$439⁹⁵

COMMODORE 128D

System Special



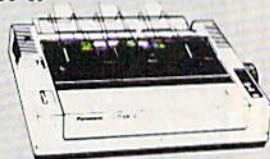
- Commodore 128D Computer/Drive
- Thompson 4120 Monitor

\$649⁹⁵

Panasonic

1091 Model II

\$185⁹⁵



Quantities Limited

Smarteam

1200 Baud Modem

\$89⁹⁵



Hayes Compatible

COMMODORE

HARDWARE

1541 C Disk Drive	\$175.95
1571 Disk Drive	\$215.95
1581 Disk Drive	\$189.95
Indus GT C-64 Drive	\$169.95
Blue Chip 64C Drive	\$139.95
Blue Chip C 128 Drive	\$195.95
1802C Monitor	\$189.95
64 C Computer	\$169.95
128D Computer/Drive	\$439.95
C-1351 Mouse	\$32.95
1700 RAM	\$109.95
C-1750 RAM	\$CALL
1764 RAM C64	\$117.95
1084 Monitor	\$239.95
128 Computer	\$CALL

Attention Educational Institutions:

If you are not currently using our educational service program, please call our representatives for details.

PC COMPATIBLE HARDWARE

PC 5 1/4 Drive	\$119
MS DOS + Basic Soft	\$59
BCM 12G Gr. Monitor	\$75
BCM 12A Am. Monitor	\$79
BGM 14C Color RGB Monitor	\$239
BCC CG Color Card	\$94.99
Zuckerboard	\$CALL
Iomega Bernoulli	\$CALL
Hercules	\$CALL
AST	\$CALL

Seagate HARD DRIVES

20 meg kit	\$259.95*
30 meg kit	\$299.95*
40 meg kit	\$489.95*
*Drives include controller	
40 meg w/o controller	\$425.95

COMMODORE 64C

COMPUTER

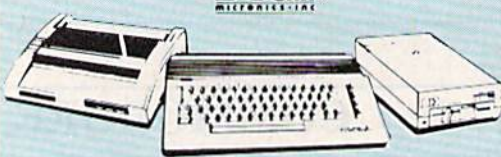


\$169⁹⁵

COMMODORE 64C System

\$459⁹⁵

- Commodore 64 C Computer
- Commodore 1541 C Drive
- **Star** NP 10 Printer



BLUE CHIP

PERSONAL
COMPUTER

- 100% IBM PC/XT compatible!

\$479⁹⁵

(Green, amber & color monitors available)



BLUE CHIP

special

PERSONAL
COMPUTER

\$749⁹⁵

(Green, amber & color monitors available)



1-800-233-8760

Lycy Means Total Service.

New Item!

Dis



**Mark "Mac" Bowser,
Sales Manager**

I would personally like to thank all of our past customers for helping to make Lycy Computer one of the largest mail order companies and a leader in the industry. Also, I would like to extend my personal invitation to all computer enthusiasts who have not experienced the services that we provide. Please call our trained

sales staff at our toll free number to inquire about our diverse product line and weekly specials.

Call Lycy

First and foremost our philosophy is to keep abreast of the changing market so that we can provide you with not only factory-fresh merchandise but also the newest models offered by the manufacturers at the absolute best possible prices. And we offer the widest selection of computer hardware, software and accessories.

Feel free to call Lycy if you want to know more about a particular item. I can't stress enough that our toll-free number is not just for orders. Many companies have a toll-free number for ordering, but if you just want to ask a question about a product, you have to make a toll call. Not at Lycy. Our trained sales staff is knowledgeable about all the products we stock and is happy to answer any questions you may have. We will do our best to make sure that the product you select will fit your application. We also have Saturday hours — one more reason to call us for all your computer needs.

Once you've placed your order with Lycy, we don't forget about you. Our friendly, professional customer service representatives will find answers to your questions

about the status of an order, warranties, product availability, or prices.

Lycy Computer stocks a multimillion dollar inventory of factory-fresh merchandise. Chances are we have exactly what you want right in our warehouse. And that means you'll get it fast. In fact, orders are normally shipped within 24 hours. Free shipping on prepaid cash orders over \$50, and there is no deposit required on

C.O.D. orders. Air freight or UPS Blue/Red Label shipping is available, too. And all products carry the full manufacturers' warranties.

I can't see why anyone would shop anywhere else. Selection from our huge in-stock inventory, best price, service that can't be beat — we've got it all here at Lycy Computer.

TO ORDER, CALL TOLL-FREE: 1-800-233-8760

New PA Wats: 1-800-233-8760

Outside Continental US Call: 1-717-494-1030

Hours: 9AM to 8PM, Mon. - Thurs.
9AM to 6PM, Friday — 10AM to 6PM, Saturday

For Customer Service, call 1-717-494-1670,
9AM to 5PM, Mon. - Fri.

Or write: Lycy Computer, Inc.
P.O. Box 5088, Jersey Shore, PA 17740

Risk-Free Policy: • full manufacturers' warranties • no sales tax outside PA
• prices show 4% cash discount; add 4% for credit cards • APO, FPO,
international: add \$5 plus 3% for priority • 4-week clearance on personal checks
• we check for credit card theft • sorry, compatibility not guaranteed • return
authorization required • price/availability subject to change • prepaid orders
under \$50 in Continental US, add \$3.00

Computer Area Light Center

- Heavy-duty weighted base for extra stability
- Built-in storage for disks, pens, and paper
- Two-hinged desktop arm for optimal positioning

**Introductory
price: \$29.95**

(includes delivery)

Disc
Storage

QVS-10 5 1/4	\$3.99
QVS-75 5 1/4	\$16.95
QVS-40 3 1/2	\$11.95

Great
News

Peak Peripherals RS232
Modem adapter for C64/128

- Adapts std DB25 Modem to your Commodore computer

Only \$19.95

Printer
Interfaces

Xetec Jr.	\$35.95
Xetec Supergraphics	\$55.95
Xetec Gold	\$CAll
PPI	\$29.95
Cardco GWhiz	\$32.95
Cardco Super G	\$44.95
MW 350	\$49.95

Special
Purchase

Data Share-Messenger Modem
300 Baud Auto Dial/Auto
Answer Modem

Only \$29.95

Great
Bargain

Contriver M-1 Mouse

- Works with Geos
- Complete with Graphic Utility Software

Only \$32.95

Mouse Pad

- provides clean, dust-free surface for your mouse
- No-mar backing to protect your desk surface

9x11 \$10.95

5-1/4

Maxell:

SSDD

DSDD

DSDD

Bonus:

SSDD

DSDD

SKC:

DSDD

DSDD

Generic SSD

Verbatim:

SSDD

DSDD

3.5

Maxell:

SSDD

DSDD

Verbatim:

SSDD

DSDD

SKC:

SSDD

DSDD

Generic SSD

Generic DSD

Joy

Tac 3

Tac 2

Tac 5

Tac 1 + IBM

Economy

Slik Stick

Black Max

Boss

3-Way

Bathandle

500XJ

Winner 909

Wico IBM/AP

Contriver Joys

Lipstick Plus

Dustc

Pan 1081/109

64C

128D

Seik. Sp1000

Epson LX800

Pri
Pa

200 sheet las

1000 sheet las

150 sheet ivor

150 sheet whit

1000 sh. b

1000 mailing l

Free shi



Surge Suppressors

PP102-6 outlet	\$16.95
PP106-6 outlet with	
EMI/RFI	\$28.95
PP104-6 outlet with	
indicator	\$19.95
PP101-6 outlet	
powerstrip	\$9.95

Drive Maintenance

5 1/4 Drive Cleaner	
CMP142	\$7.95
5 1/4 Drive Cleaner	
with program	\$15.95

Switch Boxes

Cent '25' AB	\$49.95
Cent '36' AB	\$49.95
RS232 ABC	\$52.95
Cent ABC	\$54.95
RS232 ABCD	\$59.95
Cent ABCD	\$59.95

Color Ribbons Available

Video Tape

SKC T120 VHS Video Tape:

each	\$3.99
3 pack	\$10.95
10 pack	\$35.95

Closeouts!

Factory Fresh Special Pricing Call for Availability

Quantum Link	\$SAVE
Leading Edge	\$SAVE
Computer Cover-up	
(dustcovers)	\$SAVE
Novation modems	\$SAVE
Anchor modems	\$SAVE
Certron	\$SAVE
Toshiba VCR's	\$SAVE
Teknika Monitors	\$SAVE
Panasonic Monitors	\$SAVE
Dennison Diskettes	\$SAVE

Great savings on Epyx, Cardco, Eastern House, High Tech Expressions, Time-works, Spinaker, Scarborough, Continental, and much more!!

Generic Ribbons

Save up to 50% off brand prices! Call for your make and model!

COMMODORE

COMMODORE



Access:	
Echelon	\$25.95
Mach 5	\$19.95
Mach - 128	\$28.95
10th Frame	\$22.95
Triple Pack	\$11.95
Wild. Cl. Leader Brd.	\$22.95
Famous Courses #1	\$11.95
Famous Courses #2	\$11.95
Leader Board Pack	\$14.95

Action Soft:	
Up Periscope	\$18.95
Thunderchopper	\$18.95

Activision:	
Champion Basketball	\$19.95
Music Studio	\$19.95
Leather Goddesses	\$22.95
Top Fuel Eliminator	\$15.95
Beyond Zork	\$25.95
GFL Football	\$19.95
Gee Bee Air Rally	\$16.95
Last Ninja	\$19.95
Might & Magic	\$19.95
Nord & Bert	\$19.95

Berkeley Softworks:	
Deskpak I	\$20.95
Fontpak I	\$17.95
Geodex	\$23.95
Geofile	\$29.95
Geo Calc	\$29.95
Geos 64	\$35.95
Geos 128	\$39.95
Geowrite	\$29.95

Broderbund:	
Bank St. Writer	\$27.95
Carmen San Diego	\$19.95
Graphic Lib. I, II, III	\$13.95
Print Shop	\$25.49
Print Shop Compan.	\$22.95
Print Shop Paper	\$12.95
Cauldron	\$16.95
Superbike Challenge	\$11.95

Electronic Arts:	
Bard's Tale	\$25.95
Legacy of The	
Ancients	\$20.95
Marble Madness	\$20.95
Starfleet I	\$25.95
Yeager's AFT	\$22.95

Epyx:	
Destroyer	\$22.95
Fastload	\$19.95
Sub Battle	\$22.95
Winter Games	\$22.95
California Games	\$22.95
Graphics Scrapbook	\$11.95
Str. Sports Basketball	\$22.95
Summer Games II	\$22.95
World Games	\$22.95

Firebird:	
Elite	\$18.95
Golden Path	\$22.95
Guild of Thieves	\$22.95
Pawn	\$22.95
Tracker	\$22.95
Starglider	\$18.95
Sentry	\$22.95

Microleague:	
Microleag. Baseball	\$22.95
General Manager	\$16.95
Stat Disk	\$13.95
Microleag. Wrestling	\$16.95
'87 Team Disk	\$11.95

Microprose:	
Airborne Ranger	\$22.95
F-15 Strike Eagle	\$19.95
Gunship	\$19.95
Kennedy Approach	\$13.95
Silent Service	\$19.95

Solo Flight	\$13.95
Top Gunner	\$13.95
Pirates	\$22.95
Stealth Fighter	\$22.95

Origin:	
Autoduel	\$28.95
Ultima III	\$22.95
Ultima IV	\$33.95
Moebius	\$22.95

Software Simulations:	
Pure Stat Baseball	\$22.95
Football	\$17.95
Pure Stat College	
Basketball	\$22.95

Springboard:	
Newsroom	\$29.95
Certificate Maker	\$29.95
Clip Art Vol. #1	\$17.95
Clip Art Vol. #2	\$23.95
Clip Art Vol. #3	\$17.95
Graphics Expander	\$21.95

Strategic Simulations:	
Gettysburg	\$33.95
Phantasia II	\$22.95
Phantasia III	\$22.95
Ring of Zeltin	\$22.95
Road War 2000	\$22.95
Shard of Spring	\$22.95
Wizards Crown	\$22.95
Wargame Constr.	\$16.95
Battlecruiser	\$33.95
Battle of Antietam	\$28.95
Eternal Dagger	\$22.95
Shiloh	\$22.95

Sublogic:	
Flight Simulator II	\$31.49
Jet Simulator	\$24.95
Night Mission Pinball	\$18.95
Scenery Disk 1-6	\$12.95

Timeworks:	
Partner C64	\$24.95
Partner 128	\$39.95
Swift Calc 128	\$29.95
Word Writer 128	\$29.95

Unison World:	
Art Gallery 1 or 2	\$14.95
Print Master	\$17.95



Access:	
Leader Board	\$22.95
Tournament #1	\$11.95

Activision:	
Champ. Basketball	\$25.95
Championship Golf	\$22.95
GFL Football	\$25.95
Music Studio	\$27.95

Electronic Arts:	
Deluxe Print II	\$48.95
Rockford	\$25.95
Empire	\$31.95
Scrabble	\$25.95

Epyx:	
Apsahai Trilogy	\$11.95
Rogue	\$22.95
Winter Games	\$22.95
World Games	\$22.95

Firebird:	
Guild of Thieves	\$25.95
Pawn	\$25.95
Starglider	\$25.95

Microprose:	
Silent Service	\$22.95

Sublogic:	
Flight Simulator II	\$31.49
Jet Simulator	\$31.49
Scenery Disk	\$CALL

Unison World:	
Print Master	\$19.95
Art Gallery 1 or 2	\$14.95
Fonts & Borders	\$17.95



Access:	
Wild. Cl. Leader Board	\$27.95
10th Frame	\$27.95

Activision:	
Champ. Baseball	\$22.95
Champ. Basketball	\$22.95
Zork Trilogy	\$39.95
Leather Goddesses	\$22.95
Beyond Zork	\$27.95

Broderbund:	
Ancient Art of War	\$25.95
Print Shop	\$32.95
Print Shop Compan.	\$31.95
Graphic Lib. I or II	\$19.95
Karateka	\$19.95
Toy Shop	\$22.95
Bank St. Writer + ...	\$44.95
Ancient Art of War	
at Sea	\$25.95

Electronic Arts:	
Pegasus	\$25.95
Weaver Baseball	\$25.95
Rockford	\$25.95

Epyx:	
Apsahai Trilogy	\$11.95
Create A Calendar	\$15.95
Destroyer	\$22.95
Movie Monster	\$11.95
Rogue	\$16.95
St. Sports Basketball	\$22.95
Sub Battle Simulator	\$22.95
Winter Games	\$22.95
World Games	\$22.95

Firebird:	
Starglider	\$25.95
Guild of Thieves	\$25.95

Microleague:	
Microleag. Baseball	\$22.95
General Manager	\$16.95
Stat Disk	\$13.95

Microprose:	
Conflict in Vietnam	\$22.95
Crusade in Europe	\$22.95
Decision in Desert	\$22.95
F-15 Strike Eagle	\$22.95
Silent Service	\$22.95
Gunship	\$27.95

Origin:	
Ultima I	\$22.95
Ultima III	\$22.95
Ultima IV	\$33.95
Moebius	\$33.95
Ogre	\$16.95

Strategic Simulations:	
Road War 2000	\$22.95
Gettysburg	\$33.95
Wizards Crown	\$22.95

Sublogic:	
Jet Simulator	\$31.49
Scenery Japan	\$17.95
Scenery San Fran.	\$17.95
Scenery #1-#6	\$64.95
Flight Simulator	\$34.95

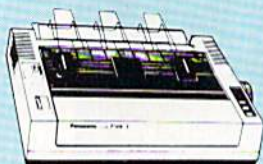
Timeworks:	
Swiftcalc	\$39.95
Wordwriter	\$34.95

Unison World:	
Art Gallery 2	\$14.95
News Master	\$49.95
Print Master (+)	\$29.95
Fonts & Borders	\$17.95

Price Guarantee

Since 1981, we have led the industry by continuing to offer the lowest national prices while providing quality service. Many companies have come and gone trying to imitate our quality and service. If by some oversight we do not have the lowest prices advertised on the products you desire, then we would appreciate the opportunity to rectify this oversight.

New 1091i Model II



Panasonic

1091i Model II

\$185⁹⁵

Monitors

Thomson:

230 Amber TTL/12"	\$85
450 Amber TTL/15"	\$119.95
4120 CGA	\$199.95
4160 CGA	\$259.95
4460 EGA	\$319.95
4375 UltraScan	\$459.95
GB 100 EGA Card	\$129.95
GB 200 Super Card	\$219.95

Blue Chip:

BCM 12" Green TTL	\$75
BCM 12" Amber TTL	\$79
BCM 14" Color	\$239

NEC:

Multisync II	\$559
--------------	-------

Save \$100 over NEC Multisync with Thomson 4375 UltraScan \$459.95

THOMSON

4120 Monitor

- 14" RGB/video composite/analog
- Compatible with IBM and Commodore
- RGB data cable included

\$199⁹⁵

Modems

Avatex:

1200e	\$75.00
1200i PC Card	\$75.00
1200hc Modem	\$95.00
2400	\$179.95
2400i PC Card	\$169.95

Hayes:

Smartmodem 300	\$149.95
Smartmodem 1200	\$285.95
Smartmodem 2400	\$425.95

New for '88



NX-1000



\$165⁹⁵

Commodore Ready

**SEIKOSHA
SP 180VC**

- 100 cps draft
- 20 cps NLQ
- direct connect for Commodore

\$129⁹⁵



PRINTERS

SEIKOSHA

SP 180AI	\$129.95
SP 180VC	\$129.95
SP 1000VC	\$139.95
SP 1200VC	\$155.95
SP 1200Ai	\$165.95
SP 1200AS RS232	\$165.95
SL 80AI	\$299.95
MP1300AI	\$269.95
MP5300AI	\$375.95
MP5420AI	\$879.95
SP Series Ribbon	\$7.95
SK3000 Ai	\$349.95
SK3005 Ai	\$429.95
800 CPS	SCALL!



NL-10 w/o Cart	\$169.95
NX-1000	\$165.95
NX-1000C	\$175.95
NX-1000 Color	\$225.95
NX-1000C Color	\$229.95
NX-15	\$295.95
ND-10	\$265.95
ND-15	\$379.95
NR-15	\$425.95
NB-15 24 Pin	\$699.95
NB24-10 24 Pin	\$425.95
NB24-15 24 Pin	\$559.95

BROTHER

M1109	\$195
M1409	\$299
M1509	\$365
M1709	\$475
Twinwriter 6 Dot & Daisy	\$899
M1724L	\$599
HR20	\$339
HR40	\$569
HR60	\$709.95



120 D	\$149.95
180 D	\$169.95
MSP-10	\$259.95
MSP-40	\$289.95
MSP-15	\$324.95
MSP-50	\$389.95
MSP-45	\$425.95

MSP-55	\$489.95
Premiere 35	\$464.95
Tribute 224	\$624.95

EPSON

LX800	\$175.95
FX86E	\$289.95
FX286E	\$429.95
EX800	\$374.95
EX1000	\$509.95
LQ500	SCALL
LQ800	\$369.95
LQ1000	\$549.95
LQ2500	\$849.95
GQ3500	SLOW
LQ850	\$499.95
LQ1050	\$679.95

292 w/interface	\$449.95
293 w/interface	\$585.95
294 w/interface	\$819.95
393	\$955.95

Panasonic

1080i Model II	\$165.95
1091i Model II	\$185.95
1092i	\$295.95
1592	\$399.95
1595	\$449.95
3131	\$269.95
3151	\$419.95
KXP 4450 Laser	SCALL
1524 24 Pin	\$559.95

Toshiba

321SL	\$489
341 SL	\$659
P351 Model II	\$899

DIABLO

D25	\$499.95
635	\$779.95

Join the thousands who shop Lyco and Save!

Do you have a question or a problem? Have you discovered something that could help other Commodore users? We want to hear from you. Write to Gazette Feedback, COMPUTE!'s Gazette, P.O. Box 5406, Greensboro, NC 27403. We regret that, due to the volume of mail received, we cannot respond individually to programming questions.

Three Sizes Fit All

I'm thinking about getting a new disk drive and was wondering if you could tell me the difference between a 5¼-inch drive, a 3½-inch drive, and a hard disk drive.

Ron Willey

The 5¼-inch drive has been the standard disk drive for as long as the Commodore 64 has been around. Since virtually all Commodore software is sold on 5¼-inch disks, this should be your choice for a first drive. Commodore sells two different 5¼-inch drives—the 1541C and the 1571. Both drives work on the 64 and the 128. Also available are several good third-party drives for Commodore machines—many of these have been reviewed in past issues.

The 1571 is more expensive, but has several features the 1541 lacks. It has a high-speed burst mode for loading files roughly five times faster, but this only works with a 128 in 128 mode or CP/M mode. It can read a variety of other disk formats, including CP/M and IBM, which is especially good if you'll be running CP/M programs or transferring files from IBM disks. The 1571 uses both sides of a disk, so the disks hold twice as much data (340K against the 1541's 170K).

You may run across other Commodore-built drives, especially if you buy one second-hand. There are several older models of 5¼-inch drives developed for the Commodore PET series. These may or may not work with a 64 and 128; you often need a special IEEE interface. The 1540 model, precursor to the 1541, was designed for use with the VIC-20. It's slightly too fast to work reliably with the 64 and 128. The 1551 was designed for the Plus/4 and 16. The 1570 is a single-sided version of the 1571, but is apparently available only in Europe. The SFD-1001 was a one-megabyte disk drive that featured more storage capacity but used a nonstandard disk format.

The primary choices among Commodore drives are the 1541, 1541C, and 1571. (The 1541C is functionally identical to the 1541.) There are various workalike drives available from third-party manufacturers, as well.

After you've bought your first disk drive (which should be a 5¼-inch model), you could consider buying an additional 5¼-inch, 3½-inch, or hard disk drive.

The hard disk drive has long been seen as an important tool for software developers. A hard drive can store much more information than a floppy disk drive—at least 10 megabytes, where a megabyte is equal to 1024K—and is much faster. Prices have been falling, so bulletin board operators and serious programmers are turning increasingly to hard drives. Commodore doesn't sell any hard drives for the 64 or 128, but several third-party developers have recently filled the void (see November GAZETTE for a review of one of these, the Lt. Kernal).

Last year, Commodore displayed its newest drive at the Consumer Electronics Show. Dubbed the 1581, this 3½-inch drive uses smaller disks, which are housed in tough plastic cases. The new drive offers greater storage and speed than a 5¼-inch drive, but less than that of a hard drive. For an in-depth look at the 1581, see the review elsewhere in this issue.

The 64 Amiga?

With the help of the new 1764 RAM Expander, is it possible to run programs written for the Commodore 128 and the Amiga? If so, with what limitations?

M. A. Tabassum

Several people have written to ask this question. The answer: No, extra RAM is not enough to make the 64 run programs written for Commodore's newest computers.

First let's consider the Amiga. This computer uses the 68000 microprocessor, while the 64 contains a chip in the 6502 family—the 6510. Programs written for one chip will not directly run on another. The Amiga also includes sophisticated graphics and sound chips that simply do not exist in the 64. It would be very nearly impossible to contrive any means to run an Amiga program on the 64—even if the disk formats were compatible.

Although the Commodore 128 shares the same processor as the 64, it too has

hardware (the 80-column VDC chip) that is missing in the 64. Also, its operating system is different.

However, the 1764 Expander is an important peripheral. It can be used to make the GEOS operating system faster. It can also be used as a ramdisk—a simulated disk drive that, although volatile, has the advantage of running at many times the speed of a true disk drive.

128 Odds And Ends

I have several questions concerning the Commodore 128. I have found a way to print flashing and underlined characters on the 128 using CTRL-B to turn on underline and CTRL-O to turn on flashing. What are the control codes to turn off these features? Does anyone have a machine language routine that will allow the 128 to use double-precision numbers? Is there any way to get sprites in the 80-column mode? What is the shortest way to print out a hardcopy of a disk directory listing from within a program?

Mike Boone

The character code table (Appendix E) in the system guide that comes with the Commodore 128 lists only codes for 64 mode. Additional information for 128 mode control codes can be found in Appendix I. To summarize, here are the new codes for 128 mode:

Code	Key	Effect
2	CTRL-B	underline on
7	CTRL-G	bell tone
9	TAB or CTRL-I	tab
10	LINE FEED or CTRL-J	line feed
11	CTRL-K	disable case switching
12	CTRL-L	enable case switching
15	CTRL-O	flash on
24	SHIFT-TAB or CTRL-X	tab set/clear
130		underline off
143		flash off

All of these codes were undefined for the Commodore 64—except for 9, which was previously the code to enable case switching with the SHIFT-Commodore key combination. Code 8, used to disable case switching for the 64, is undefined in 128 mode. The underlined and flashing character attributes are for the 80-column

screen only; these codes have no effect on the 40-column screen. Note that there are no key combinations that produce codes 130 or 143, so you must use a CHR\$ to generate these codes in PRINT statements. For example:

```
PRINT "THIS IS ";CHR$(2); "UNDER
      LINED";CHR$(143); " TEXT"
```

A higher-precision math package may be available for the 128, but we're not aware of such a product. All the arithmetic routines in Commodore BASIC are designed to handle only the standard precision. (It's not really fair to call it single precision when no double precision is available.) A complete high-precision math package would probably be very large and not particularly compatible with existing programs.

If it's any consolation, Commodore's arithmetic routines are more accurate than single-precision numbers on the IBM PC and many other computers. IBM single-precision values are held in only four bytes, while Commodore floating-point values use five bytes. As a result, the Commodore's arithmetic results are accurate to as many as 10 significant digits (although the printing routine rounds to 9 digits). By comparison, IBM single-precision numbers are accurate to only 6 or 7 digits. Consider the result of the operation $193 \div 71$. The actual value to 12 significant digits is 2.71830985916. IBM BASIC reports a result of 2.71831, while the Commodore returns 2.71830986. Try this short program:

```
10 X=0:Y=.0001
20 FOR I=1 TO 10000
30 X=X+Y
40 NEXT I:PRINT X
```

With perfect accuracy, the result should be 1. A Commodore returns 1.00000019, while an IBM returns 1.000054. In this case, the IBM's margin of error is 285 times larger than the Commodore's.

By the way, the math routines in BASIC ROM are nearly identical in all Commodore eight-bit computers from the PET to the 128. Thus, a given operation should produce the same result on almost any Commodore.

Sprites are a special hardware feature of the VIC-II chip that provides the 40-column video output. The VDC chip, which produces the 80-column display, doesn't include sprite circuitry, so there's no way to have true sprites on the 80-column screen. It would be possible to write a program that simulates sprites by storing the original contents of an area of the 80-column screen before drawing a new pattern in that area, and then restoring the original contents before moving the pattern to a new area. However, such simulated sprites would be much slower and more difficult to work with than the true sprites of 40-column mode.

Given elementary knowledge of

BASIC 7.0, you'd think that it would be simple to print a 128 disk directory with the statement OPEN 4,4:CMD 4:DIRECTORY:CLOSE 4. If you try this, however, you'll find that it doesn't work. DIRECTORY and the equivalent CATALOG both cancel the effect of CMD. Outside a program you could load the directory into memory with LOAD"\$0",8 and print it with OPEN 4,4:CMD 4:LIST:PRINT#4:CLOSE 4. Unfortunately, there is no equally simple way to print a directory listing within a program. Here's a short program segment that produces the desired results:

```
1000 OPEN 8,8,0,"$0":OPEN 9,4
1010 C=6:GOSUB 1100
1020 FOR I=1 TO 25:GET#8,A$:PR
      INT#9,A$;:NEXT I:PRINT#
      9
1030 C=3:GOSUB 1100:IF SS THEN
      CLOSE 9:CLOSE 8:END
1040 GET#8,A$,B$:PRINT#9,STR$(
      ASC(A$)+256*ASC(B$));"
      {2 SPACES}";
1050 FOR I=1 TO 27:GET#8,A$:PR
      INT#9,A$;:NEXT I:PRINT#
      9
1060 GOTO 1030
1100 FOR I=1 TO C
1110 GET#8,A$:SS=ST:IF SS THEN
      I=C
1120 NEXT I:RETURN
```

The key to getting a properly formatted directory is the secondary address of 0 in the first OPEN statement in line 1000. Any other secondary address value will yield only a garbled mess. This routine will also work on the Commodore 64 if the $ASC(A$) + 256 * ASC(B$)$ in line 1040 is replaced with $ASC(A$ + CHR$(0)) + 256 * ASC(B$ + CHR$(0))$. To use this as a subroutine within a larger program, simply renumber as appropriate and replace the END in line 1030 with a RETURN statement, then GOSUB to the first line of the subroutine.

More Speed Isn't The Answer

I frequently encounter the need to randomize a series of numbers, especially in card and alphabet games. I'm enclosing the subroutine I use. It repeatedly picks a number until it finds one that has not been selected. The difficulty I have is that it becomes drastically slower as it nears the end of the list. The more numbers picked, the smaller the odds of randomly picking a new number.

I'm aware that machine language is considerably faster than BASIC. Could my subroutine be improved to speed it up or would you write an ML program that will accomplish the same task at a much greater speed?

George Brady

Machine language (ML) isn't the answer to your problem; a better algorithm for creating a random list is.

The result you seek is a scrambled list

of unique numbers. If the array holds 1000 numbers, you want each of the numbers 1-1000 to appear only once. Your approach works, but it has a fundamental flaw. When you reach the thousandth slot in the list, there's only one number that has not been selected. The RND function has only one chance in a thousand to hit the right one. We ran ten tests, generating 1000 unique random numbers. In the best cases, the 64 only had to try 49 possibilities and 163 possibilities before finding the thousandth number. In the two worst cases, it had to look at 2420 and 3600 numbers before it came up with the right ones.

The BASIC program could be converted to ML, but when reaching the final numbers, it still might have to check several thousand possibilities.

Here's a better algorithm: Begin with a sorted list in which the first number is 1 and the last is 1000. You know in advance that each number is recorded only once. Then, scramble the list by randomly swapping two numbers. The routine would look like this:

```
10 DIM X(1000)
20 FOR I=1 TO 1000:X(I)=I:NEXT
      I
30 FOR I=1 TO 1000
40 A=INT(RND(1)*1000+1)
50 B=X(A):X(A)=X(I):X(I)=B
60 NEXT I
70 FOR I=1 TO 1000:PRINTI,X(I)
      :NEXT I
```

A Reset Key For The 64

I've owned my Commodore 64 for about a year. I'm very satisfied with it, but I can't understand why it was designed without a reset key. On my old TI-99/4A, pressing Control and Quit simultaneously accomplished this. Also, why don't commercial software developers incorporate, into their programs, ML routines that would allow you to reset with the press of a key?

Ron Hoffman

Holding down RUN/STOP and pressing RESTORE performs a warm start most of the time (however, if a program locks up your 64, you'll have to turn it off and then back on). For a nearly complete cold start, you can type SYS 64738. To regain a BASIC program that was in memory, enter POKE 2050,1:SYS 42291:POKE 45,PEEK(34):POKE 46,PEEK(35):CLR. These POKES also reverse the effects of the NEW command.

If you would like an inexpensive reset button, try this: POKE 792,226:POKE 793,252. Press RESTORE and your 64 will reset itself—but only once. The process of resetting changes the vector at 792 back to normal, so you'll have to retype the POKES after each reset.

Several hardware reset switches are available for the 64. The ones we have seen either plug into the user port or are wired directly inside the case. We also have seen the wiring diagram for a simple

reset switch that plugs into the user port. All that's required to build the switch is an edge connector, a resistor, and a diode.

The Third Dimension

I have a good understanding of how one- and two-dimensional arrays work, and how to set them up. But how in the world does a three-dimensional array look? For example, DIM CC%(4,4,4). My owner's manual doesn't explain it very well.

Steve Webber

The figure at the right may help you visualize a three-dimensional array. A simple variable has a name and a value: $A = 5$, for example. A one-dimensional array has one name and a subscript (or index) inside parentheses. You can imagine a row of variables, each of which is numbered. A two-dimensional array has two subscripts, which you can visualize as a grid. A three-dimensional array has three indices inside parentheses, which you can visualize as a block of variables. Four- and five-dimensional arrays are harder to visualize, but the principle is the same.

In the example you gave, DIM C%(4,4,4) would create an array of 125 integer variables. Each dimension has five open slots numbered 0-4, so the total size is $5 \times 5 \times 5$.

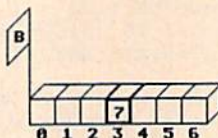
Simple variable

$A=5$



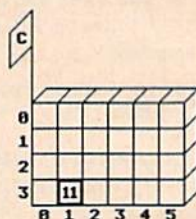
Arrays

One dimension
 $B(3)=7$



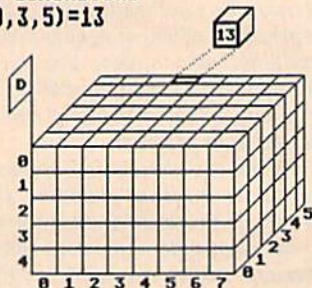
Two dimensions

$C(1,3)=11$



Three dimensions

$D(0,3,5)=13$



How would a three-dimensional array be used? Let's say you've invested money in four different stocks and you want to track them for 300 days, given a high price, low price, and close. The three indices would represent stock number, day number, and price, and you would create the array with DIM S(3,299,2). Remember that arrays start counting at 0, so this would build an array that has $4 \times 300 \times 3$, or 3600, entries. Numeric arrays take up 5 bytes per variable, so you would need 18,000 available bytes for S(3,299,2). Integer arrays, which are marked by a percent sign, use only 2 bytes. Thus, S%(3,299,2) would require 7200 bytes.

Stashing A Hi-Res Screen

I would like to know if you can PEEK the high-resolution screen and place the numbers in a number string (say A(I)) or in memory, and then with a SYS, POKE it back on the high-resolution screen. I have a Commodore 128. Can you write me a program?

Paul Hutchinson

There are three ways to save the Commodore 128's high-resolution screen. One way is to write a 32-element string array, with each element containing 254 bytes of high-resolution screen information. It would be very slow, but here is how it would be written:

```
10 DIMA$(32)
20 FORI=0TO32:FORJ=0TO254
30 A$(I)=A$(I)+CHR$(PEEK(8192+
I*255+J))
40 NEXTJ:NEXTI
```

This method takes four minutes and 31 seconds to save the high-resolution screen.

The second method is simply to save the high-resolution screen to disk. The 1541 disk drive can save the high-resolution screen in just 13 seconds. The syntax for this statement is:

```
BSAVE"FILENAME",D0,U8,B0,P
8192 TO P16192
```

The fastest method to save the screen is to use the SSHAPE command. The following routine clears the high-resolution screen, draws a circle on it, and saves it to an array variable in just four seconds:

```
5 GRAPHIC1,1:CIRCLE1,160,100,1
00,100
10 DIMA$(39)
15 FORI=0TO39
20 SSHAPEA$(I),0,I*5,320,I*5+5
25 NEXTI
```

To return the screen from memory, use the following routine:

```
30 GRAPHIC1,1:FORI=0TO39
35 GSHAPEA$(I),0,I*5,0
40 NEXTI
```

There are many other ways to use the SSHAPE and GSHAPE commands. Consult your Commodore 128 System Guide.

COLOR PRINTER RIBBONS

COLORS: RED BLUE GREEN
BROWN PURPLE YELLOW

Ribbons	Price Each	Black	Color	Heat Transfer
Apple Imagewriter I/II	3.95	4.95	6.50	
Brother M1009	4.95	5.95	7.00	
Citizen 120D	5.00	—	—	
Commodore MPS 801	4.15	4.75	5.75	
Commodore MPS 802	5.75	6.75	—	
Commodore MPS 803	4.95	5.95	7.00	
Commodore MPS 1000	3.60	4.25	6.75	
Commodore MPS 1200	5.00	—	—	
Epson AP 80	5.25	6.50	7.95	
Epson LX 80/90	3.60	4.25	6.75	
Epson MX/FX/RX 80	3.75	4.25	6.75	
Okidata 82/92/93	1.75	2.25	4.25	
Okidata 182/192	6.00	9.00	—	
Panasonic KX-P1090	6.50	9.75	—	
Seikosha SP 800	5.25	6.50	7.95	
Star SG 10	1.75	2.25	4.50	
Star NX10/NL10	5.00	6.00	7.95	

T-Shirt Ribbons (Heat Transfer) —

Call For Price & Availability.

For ribbons not listed above, call for price and availability. Price and specifications are subject to change without notice.

Minimum order is \$25.00. Shipping & handling \$3.50. UPS Ground. Add \$2.00 C.O.D. additional. Illinois residents add 6.25% tax. MasterCard and Visa accepted.

RENCO COMPUTER PRINTER SUPPLIES

P.O. Box 475, Manteno, IL 60950 U.S.A.
1-800-522-6922 815-468-8081

**COMPUTE!'s
GAZETTE
TOLL FREE
Subscription
Order Line
1-800-727-6937**

COMPUTE! Books' WAREHOUSE CLEARANCE SALE

You can order any of the following groups of books for \$9.95*. Or, choose any three books from anywhere in this ad and pay \$9.95* for all three. Each additional book after 3 is just \$2.00. (If you want only one or two books, the cost is \$4 each.)

Check the books or groups of books you want and mail this coupon with your payment to:

COMPUTE! Books
Customer Service
PO Box 5038
F.D.R. Station
New York, NY 10150

* Add \$2 per order for shipping and handling.

Name _____

Address _____

City _____ State _____ Zip _____

☐ VISA ☐ Mastercard

Acct. No. _____ Exp. Date _____

☐ U.S. money order

☐ Check drawn on a U.S. bank

Subtotal \$ _____

Sales Tax (NC residents add 5%; NY residents add 8.25%) \$ _____

Shipping and handling \$2.00 \$ 2.00

Total payment enclosed \$ _____

Offer good while quantities last. All sales final.
Please allow 4-6 weeks for delivery.

- ☐ **Group I** **\$9.95**
☐ COMPUTE!'s Beginner's Guide to Commodore 64 Sound 238654X
☐ COMPUTE!'s First Book of Commodore 64 Sound and Graphics 2386213
☐ COMPUTE!'s Reference Guide to Commodore 64 Graphics 2386299

- ☐ **Group II** **\$9.95**
☐ Every Kid's First Book of Robots 2386051
☐ Commodore 64 Games for Kids 238637X
☐ COMPUTE!'s Computing Together 2386515
☐ All About the Commodore 64, Vol.1 238640X

- ☐ **Group III** **\$9.95**
☐ COMPUTE!'s Commodore Collection, Vol. 2 2386701
☐ COMPUTE!'s Commodore Collection, Vol. 1 2386558
☐ COMPUTE!'s First Book of Commodore 64 2386205

- ☐ **Group IV** **\$9.95**
☐ COMPUTE!'s Third Book of Commodore 64 2386728
☐ Creating Arcade Games on the Commodore 64 2386361
☐ COMPUTE!'s First Book of Commodore 64 Games 2386345

- ☐ **Group V** **\$9.95**
☐ COMPUTE!'s Data File Handler for the Commodore 64 2386868
☐ COMPUTE!'s Telecomputing on the Commodore 64 0092
☐ Commodore Peripherals: A User's Guide 2386566

- ☐ **Group VI** **\$9.95**
☐ COMPUTE!'s First Book of VIC 2386078
☐ COMPUTE!'s Second Book of VIC 2386167
☐ COMPUTE!'s Third Book of VIC 2386434
☐ Mapping the VIC 2386248

- ☐ **Group VII** **\$9.95**
☐ COMPUTE!'s VIC Games for Kids 2386353
☐ Creating Arcade Games on the VIC 2386256
☐ COMPUTE!'s Second Book of VIC Games 2386574
☐ COMPUTE!'s First Book of VIC Games 2386132

COMPUTE! Publications, Inc. 
A Capital Cities/ABC, Inc. Company

simple answers to common questions

Tom R. Halfhill, Contributing Editor

Each month, *COMPUTE!'s Gazette* tackles some questions commonly asked by Commodore users. If you have a question you'd like to see answered here, send it to this column, c/o *COMPUTE!'s Gazette*, P.O. Box 5406, Greensboro, NC 27403.

Q. What happens when the flashing cursor on my Commodore 128 (in 64 mode) vanishes suddenly for no apparent reason while I'm working on something? I seem to be able to do nothing to get it back (except turning off the computer and turning it back on again). It doesn't happen often, but when it does, I have sometimes lost hours of work—very frustrating. Why does it disappear? Where does it go? If I wait long enough, will it come back? Most important, what can I do?

A. It sounds like you're suffering from an untoward event known to computer users as a *system crash* or *lockup*. Unfortunately, it's a normal part of computing.

It may be due to a bug in the program you're using, a bug in the computer's operating system, a bug in some peripheral (such as the disk drive or printer), or even a weird combination of things. Practically all programs and computer components harbor bugs of some kind. Usually what happens is that the bug makes the computer fall into a netherworld known to programmers as an *infinite loop*. That is, the computer gets trapped within a looping series of program instructions from which there is no escape.

It's sort of like an old joke that children play: "Pete and Repeat went to the store to buy some candy. Pete fell down, so who was left?" When you answer "Repeat," the response is, "Pete and Repeat went to the store . . ." and so on.

Even the dumbest kids on the block fall for this joke only two or

three times before they realize it's pointless and quit. But a computer isn't quite as clever, and it's not programmed to disobey instructions, no matter how inane those instructions may be. So when a computer stumbles into this kind of trap, it works with characteristic efficiency and keeps "repeating" forever.

While trapped in this loop, the computer ignores all input and produces no useful output. Industrious to a fault, it devotes full attention to what it's doing. To all outward appearances, it seems to be comatose or catatonic, even though its silicon mind is racing.

That's why the cursor seems to disappear. The cursor doesn't actually go anywhere, of course, because it never existed in the first place. A flashing cursor is just a small area of the screen which the computer blinks on and off at regular intervals. When the computer is trapped in a loop, it has no time to display the cursor, check the keyboard for input, or do anything else. You could wait for centuries and the cursor would never come back.

All you can do is turn the computer off and back on again to clear it, or press the reset button. Either way, the information in memory will most likely be wiped out. To avoid losing hours of labor to system crashes, acquire the practice of pausing now and then to save your work on disk.

Q. I correspond with several pen pals overseas. I have a small, pocket-sized electronic translator that translates words into various languages, but it works on only a word or two at a time, so it's cumbersome for translating an entire letter. What I'd like to see is a translation program for my Commodore which would let me enter English sentences and have them translated into German. Also, the program could reverse the process,

so I could enter German sentences and have them translated into English. It seems to me that this would be a fantastic aid, not just for hobbyists, but for business people as well. Does such software exist or is it forthcoming?

A. The kind of program you want would indeed be extremely useful, but it requires a computer much more powerful than a Commodore 64 or 128. Even the most powerful personal computers available today, such as the \$11,000-plus IBM PS/2 Model 80, would have trouble coping with this task.

A program that translates individual words or even short phrases is fairly simple to write, which is why your pocket-sized translator is possible. But a program that flawlessly translates whole documents is another story. In addition to having a vocabulary of hundreds of thousands of words, such a program would have to incorporate all of the grammatical rules (and exceptions to rules) for each language. It would also need a glossary of special terms and colloquial phrases, because often these can't be translated directly.

To store all of this information in memory would call for many megabytes of RAM. More likely, the information would be stored on a high-speed mass storage device, such as a large-capacity hard disk or CD-ROM (compact disc-read only memory).

Although we're not aware of any such programs on microcomputers, we'd be willing to bet that they exist on large mainframe systems. For one thing, programs like this would be invaluable to intelligence services, which invest thousands of hours in translating magazines, newspapers, and professional journals gathered from all over the world.

machine language programming

Managing Memory

Jim Butterfield
Contributing Editor

When you write a machine language program, it's important to plan your memory usage carefully. One of the most visible signs of a professionally written program is well organized use of memory.

Most programs can be divided into three sections. First, there's the area of memory that contains *code*—the actual instructions of your program. Second, there are the *constants*—data used by the program that don't change. Finally, there are the *variables*—the values that the program changes as it runs. As a rule, code and constants never change. Again, as a rule, variable space is not saved as part of the program. Instead, programs generate their own variables, making use of variable memory only when needed, "on the fly," so to speak.

There are exceptions to these rules, and it's possible to muddle the various categories together. For instance, a programmer may write a program that modifies itself as it runs; some of the actual machine language instructions are changed by the program itself. This kind of programming is tricky and should be avoided unless there's a good reason for it. The most serious problem caused by this type of programming is that the program may not run twice without being reloaded, since it's no longer in its original form.

Organizing Memory

It's often a good idea to organize your programs so that the main program comes first and is followed by subroutines; then put in the constants, with numeric values and strings separated; and, at the end, have an area allocated (but with nothing defined) for variables.

Keeping code up front makes it easier for you to disassemble and debug your program. It's difficult to

look through a program that has constants and variables mixed in with the code. Also, compact code helps keep your branches in range (a 6502 branch instruction has a range of a little over 120 bytes forward or backward).

If your code is kept close to your constants, you'll be able to bring it all into memory with a single load from disk or tape. What's more, if you fear that part of your program memory has been altered due to a bug, a quick VERIFY will tell you whether anything has actually been corrupted. If you have variables mixed in with the code or you use self-modifying code, you won't be able to use this VERIFY technique.

If you're a beginning programmer without a full symbolic assembler, it's hard to write compact code. It's good practice in this case to leave blanks—unused bytes of memory—between different sections of code, in case you've overlooked something. You can fill in these blank areas with NOPs (No Operation, a do-nothing command).

An Organized, But Friendly Program

Let's write a simple machine language program that asks you for your name and then replies with a friendly "HELLO, name." I've divided this program into the three different sections discussed above: code, constants, and variables. The actual program is the code, the input prompt and HELLO message make up the constants section, while the name input by the user is placed into variable storage that follows.

To make it easy to enter, I've written the program as a BASIC loader which POKES the machine language into memory. The machine language is POKEd to a memory area suitable for all Commodore eight-bit computers except the Commodore 128 in 128

mode. Type in the program and save it to disk before running it.

The code part of this program goes from hexadecimal (hex) \$0340 to \$0393 (decimal 832 to 915). To view the program's instructions, you need to disassemble the code using a machine language monitor. The constants are close by at hex \$0394 to \$03AB (decimal 916 to 939). The variable area is not included in the DATA statements since it's generated by the program when the user enters his or her name. Variables are stored at hex \$03C1 (decimal 961) and up. Hopefully, the user won't input more than 64 characters. If more than 64 characters are entered, the name starts to run into screen memory—the program doesn't test for this.

```
CB 100 REM PROGRAM SECTION
GD 110 DATA 162,0,189,148,3,32,
    210,255
KB 120 DATA 232,224,17,144,245,
    162,0
QC 130 DATA 142,192,3,32,228,2,
    55,41,127
RE 140 DATA 201,13,240,16,201,
    65,144,243
CC 150 DATA 32,210,255,174,192,
    3,157,193,3
RH 160 DATA 232,208,228,32,210,
    255,162,0
AF 170 DATA 189,165,3,32,210,2,
    55,232,224,7
GP 180 DATA 144,245,162,0,189,
    193,3
JF 190 DATA 32,210,255,232,236,
    192,3
PP 200 DATA 144,244,169,46,32,
    210,255
AH 210 DATA 169,13,32,210,255,
    96
QP 220 REM PROMPT MESSAGE
PS 230 DATA 69,78,84,69,82,32,
    89,79,85,82
QQ 240 DATA 32,78,65,77,69,58,
    32
SG 250 REM HELLO STRING
XC 260 DATA 72,69,76,76,79,44,
    32
EM 300 FOR J=832 TO 939
BC 320 READ X
DR 330 T=T+X
PC 340 POKE J,X
DQ 350 NEXT J
XA 360 IF T<>13608 THEN PRINT
    {SPACE}"ERROR IN DATA":
    STOP
RK 400 SYS 832
```


computing for families

The Secret Life Of Fred D'Ignazio

Fred D'Ignazio
Associate Editor

I sat tilted back in the barber's chair, listening to the Monkees sing in tinny voices on the dusty little barber shop radio. The barber didn't seem to mind that I had my eyes closed and was dozing as he snipped away at the hair around my ears. He was too involved in imagining aloud how great it must be to be a writer.

"Oh, you writers have it made," he said. Snip. Snip. "You work at home." Snip. "You don't have to show up for work." Snip. "You don't even have to get dressed." Snip. "You can go anywhere, do anything you like. What a glamorous life."

Then he heaved a big sigh and began snipping furiously at my eyebrows.

My eyes popped open. The scissors swooped like giant birds just above my eyelids. "No!" I cried. "It's not like that at all!"

His snipping grew more sullen and capricious. "Sure," he said. Clumps of eyebrow hairs pelted my nose.

"I mean it," I said as I slid slowly down in my seat, retreating from those flashing blades. "What a writer writes may be exciting, but the writer's life is a bore."

"Right," said the barber, totally unconvinced. "You travel all over to get story ideas. You write a book, then you go on TV talk shows, get yourself snookered talking to pretty women at parties your editor throws for you, and you come home to find a fat check in your mailbox. Tell me about it."

"What parties?" I cried. "What pretty women?" I was starting to squirm, as much from his questioning as from his haircutting. "Look," I said. "You want to know what I do every day?"

"This morning, the first thing I did was feed the cat. Then I made

the kids' breakfast. I made my wife's breakfast. I said good-bye to my wife and ran my kids to school. Then I spent an hour straightening the house and making beds. I watched a little Donahue, had a cup of coffee, and went down in the cellar and changed the kitty litter. Then I turned on my computer. . . ."

"What's your computer got to do with it?" he asked, spinning me around by my shirt collar, and lathering the back of my neck.

"Oh, boy," I thought. "This guy really doesn't understand." But all I said was: "I use my computer for writing. The most exciting thing I do all day is writing. But even that's pretty boring. Just peck, peck, peck at the keys, all day long. Write something. Delete it. Struggle with it. Write it again."

"And then?" said the barber, his face lighting up. "And then?"

"And then the kids come home," I said, wiggling and itching from all the little hairs that had fallen down my back. "Then it's time to make the kids' snacks, stop them from fighting, run them to soccer practice, put in a load of laundry, and start dinner so that it's well along when my wife comes home."

"That's your whole day?" the barber said. He looked crestfallen, disappointed. His shears stopped buzzing; his arms fell to his sides. "You mean that's all?"

"That's all," I said. I tried to mirror his look of dejection. But inside I was grinning. I didn't dare tell him what really went on all day, in addition to the ordinary, humdrum events I had just described. He didn't know what I really did when I was alone by myself all day. No one did. It was my secret—the secret life of Fred D'Ignazio.

Conqueror, Avenger, Berserker

In the morning when the last child was safely dropped off at school I

raced home. Even before the ritual of washing the morning dishes or making the beds I headed straight for my Commodore computer and turned it on. In less than a minute I had shed all ties with my mundane, earthly existence. No longer was I Freddie the househusband or Freddie the daddy. Now I was Fred the Conqueror, Fred the Avenger, and Fred the Berserker. Depending on the game I loaded into the computer, I got to travel back in time, journey into the future, or sail off through clouds and mist and intergalactic supernovae and assume my true identity—Master of the Universe! Pretty soon, all thoughts of crumpled covers, dirty sinktops, and column deadlines vanished from my brain, and I was committed body and soul to battling a crew of aliens, or outwitting a malevolent magician, or climbing a cliff to a fabulous treasure.

My computer was my magic carpet, and I sailed away from the so-called glamorous life of a writer into new worlds, new experiences, and new friends.

I opened my eyes. I was still sitting in the barber chair, but now the barber was looking at me with a strange expression on his face. Could he tell what I'd been thinking? Was my secret revealed? Did he know what a writer really did?

"I was just saying," he said as he whipped the white sheet off my body and dusted my shoulders with his little broom, "that you might consider finding a new job. It's got to be more exciting than what you're doing now."

I slid out of the chair and nodded, and even gave him a big tip. Then I rushed out of the barber shop and headed home. If I hurried, I had time for a quick trip to another planet before my kids got home. And I was smiling. "Being a writer isn't so bad," I told myself. "Not if you can keep a secret." ■

Greg J. Badros

Here's a program that allows you to print out GEOS disk directories. Each directory listing includes information such as file size, author name, and even file comments. Directory printouts are output in an organized format, making it easy to locate and learn about your GEOS files. This program works with 64 GEOS (single-sided) disks only.

To list a normal 64 disk directory to your printer, all you have to do is load the directory and enter OPEN 4,4,7:CMD 4:LIST. You can do this with GEOS disks, but the results are far from complete. GEOS file directory entries contain much more information than standard 64 files. Each GEOS file has a file type, file size, file class, file date, and comments field.

"Directory Printer" creates complete printouts of GEOS disk directories. Having a hardcopy of a GEOS disk directory makes it easy to find files. Also, information once obtainable only through the deskTop's Info option is made readily available with a printout.

Typing It In

Type in Directory Printer using "MLX," the machine language entry program found elsewhere in this issue. Respond to MLX's prompts with the following values:

Starting address: 0801
Ending address: 12E0

After you've finished typing in the program, be sure to save a copy to disk.

Directory Printer is a standalone program. You do not have to run Directory Printer from the GEOS environment. In fact, Directory Printer loads and runs just like a BASIC program.

To print a GEOS directory, simply load and run Directory Printer,

insert a GEOS disk, and press RETURN. If the disk in the drive is not a GEOS disk, the computer tells you so and reruns the program. After printing a listing, the program asks whether you wish to print another directory. Answer no to exit the program and return to BASIC.

Due to GEOS's more involved file structure, more information is printed in a GEOS directory than in a regular 64 or 128 directory. This information varies among file types, but it is generally the same information produced by the deskTop's Info option. See the sample printout for an example directory listing.

Directory Format

Directory Printer prints the name of the disk and the current page number at the top of each page. The page number corresponds to the Disk Notepad page in which the files are located. The last page of the printout lists files that are found on the border (on the deskTop, below the Disk Notepad).

Filename, file type, and file

size are listed for each directory entry, whether or not they're GEOS files. GEOS has its own file types, such as Application, Desk Accessory, Printer Driver, and so on. The standard Commodore DOS file type—USR, PRG, or SEQ—follows in parentheses. GEOS files are almost always USR files. File size is shown in both kilobytes (K) and disk blocks.

For all GEOS files, Directory Printer lists the file class, modified date, and comments field. File class is simply the class of the file as it appears in the file's information window. The modified date is the time and date that the file was last modified. File comments appear last.

GEOS program files have two additional pieces of information: memory info and author name. Memory info consists of the starting address, ending address, and entry address for a program. This is vital information for GEOS programmers. The author name, of course, gives the name of the program's creator.

See program listing on page 91. ■

```

Name : GEOS KERNAL
File Type : System Program (USR)
Size : 22K (85 Blocks)
File Class : GEOS Kernel V1.2
Modified : On 04/07/86 At 12:00 pm
Mem. Info : $0000 to $FFFF --*-- Entry At : $C22C
Author : Berkeley Softworks
Comments : This is the core of the GEOS
operating system.

Name : DESK TOP
File Type : System Program (USR)
Size : 18K (72 Blocks)
File Class : deskTop V1.2
Modified : On 04/07/86 At 12:00 pm
Mem. Info : $0406 to $0405 --*-- Entry At : $0406
Author : Brian Dougherty
Comments : Use the deskTop to manage and
manipulate your files.

Name : GEOPAINT
File Type : Application (VLIR) (USR)
Size : 30K (119 Blocks)
File Class : geoPaint V1.1
Modified : On 04/07/86 At 12:00 pm
Mem. Info : $0400 to $03FF --*-- Entry At : $0400
Author : Jim DeFrisco
Comments : geoPaint is a full-featured color /
black & white graphics editor.
    
```

"Directory Printer" produces output as shown in this sample.

BASIC for beginners

More On The Random Function

Larry Cotton

Last month we learned how to generate a random number from 1 to 10 and used RND to determine the toss of a coin. To make life easier, we introduced two lines of code:

```
10 L = 1:U = 10
20 N = INT((U - L + 1)*RND(1)) + L
```

Here, the variables L and U represent the lower and upper limits of the random number to be generated. As you can see, these lines currently produce a random number between 1 and 10, inclusively.

One of the most popular uses for random numbers (at least in games) is to simulate the rolling of dice. Enter this short example, which illustrates the rolling of one die:

```
10 L = 1:U = 6
20 N = INT((U - L + 1)*RND(1)) + L
60 PRINT "PRESS ANY KEY TO SEE
WHAT YOU ROLLED.":PRINT
70 GET AS:IF AS = "" THEN 70
80 PRINT "YOU ROLLED"N
90 PRINT:GOTO 20
```

For both dice, add the following lines:

```
30 D1 = N
40 D2 = INT((U - L + 1)*RND(1)) + L
50 N = D1 + D2
```

You might have thought we could have simply set the variable L in line 10 equal to 2, for snake eyes, and U equal to 12, for two 6s. This would generate a random number between 2 and 12, but it would not accurately simulate two dice. You see, the odds of getting a number such as two (1 + 1) is much lower than getting a seven (1 + 6, 2 + 5, or 3 + 4). To account for this, we must produce two random numbers between 1 and 6, and then add them together.

Ordered Randomness

Randomness can be tempered with order. Here's a way to tilt the scales in a particular direction—in this case, causing after many loops, one person's name to be generated approxi-

mately twice as often as another.

```
10 PRINT "PRESS ANY KEY TO STOP."
20 FOR T = 1 TO 1000:NEXT
30 L = 1:U = 3
40 N = INT((U - L + 1)*RND(1)) + L
50 ON N GOTO 60,60,70
60 PRINT "DAVE":D = D + 1:GOTO 80
70 PRINT "MIKE":M = M + 1
80 GET AS:IF AS = "" THEN 40
90 PRINT:PRINT "NO. OF DAVE'S IS"D
100 PRINT:PRINT "NO. OF MIKE'S
IS"M
```

In this example, line 40 generates a random number between 1 and 3. The ON-GOTO in line 50 sends control of the program to the line number that corresponds to our random number. Thus, when a 1 or 2 is generated, control goes to line 60. Line 60 prints the name DAVE. When a 3 is generated, control jumps to line 70, which prints the name MIKE. Lines 60 and 70 also contain the two counters, D and M. Each time a particular name is chosen, the corresponding counter is incremented.

Line 80 uses GET to check the keyboard for keypresses. If no keys have been pressed, control is sent back to line 40 to generate another random number. If a key is pressed, lines 90 and 100 are executed, printing out the values of D and M. When run enough times, DAVE is printed twice as many times as MIKE. Try it and see.

Math Drills

Another popular use for random numbers is generating problems in math drill programs. How does one begin to write such a program? First we need to ask ourselves what sort of drill is needed. To keep our example relatively short, let's use multiplication only. Also, let's limit our math problems to numbers between 0 and 9. We'll begin by defining our number's lower and upper limits:

```
10 L = 0:U = 9
```

We'll need a problem counter as well. Let's use P and set it for the

first problem:

```
20 P = 1
```

To make sure a different random problem is presented every time the program is run for the first time, we must use a statement that we haven't seen before. For now, just type it in.

```
30 Q = RND(- TI)
```

Start with a nice blank screen.

```
40 PRINT "{CLR}"
```

Print the instructions and initialize our answer string.

```
50 PRINT:PRINT "TYPE THE ANSWER
AND PRESS RETURN."
60 PRINT:PRINT "PRESS ONLY THE
RETURN KEY FOR SCORE."
70 PRINT:PRINT "(THE LAST
PROBLEM ISN'T COUNTED.)"
80 ANSWER$ = ""
```

Next, we need to generate two numbers (multiplicands) from 0 to 9. These numbers, M and N, are randomly generated.

```
90 M = INT((U - L + 1)*RND(1)) + L
100 N = INT((U - L + 1)*RND(1)) + L
```

Then we print the problem, preceded by a blank line for nice appearance.

```
110 PRINT:PRINT M"X"N" = ";
```

The easiest way to ask for a user's answer is to use INPUT.

```
120 INPUT ANSWER$
```

The INPUT statement outputs a question mark and a flashing cursor on the screen. Thanks to the semicolon in line 110, they immediately follow the problem.

We should prevent the computer from accepting anything but numeric input. We've seen comparisons of strings for equality (IF AS = BS) and inequality (IF AS < BS), but did you realize that strings can be compared with less-than (<) and greater-than (>) symbols?

```
130 IF ANSWER$ > "9" THEN PRINT "
{3 UP}":GOTO 110
```

If letters or other illegal characters are entered, the three cursors-

up and GOTO 110 cause the program to reprint the question at the same location on the screen.

Our instructions state that the program announces the score if the RETURN key is pressed. The next line takes care of this:

```
140 IF ANSWER$ = "" GOTO 300
```

If ANSWER\$ is null, the user must have pressed RETURN without entering a number. In this case, control goes to line 300, where we print the score (we'll write this later on).

To convert ANSWER\$ into a number, we use BASIC's VAL() function.

```
150 A = VAL(ANSWER$)
```

Now that we have a numeric value, let's see if it's the right answer.

```
160 IF A = M*N THEN GOSUB  
200:GOTO 80
```

Later, we'll write a correct-answer subroutine beginning at line 200, which contains, as always, a RETURN. The RETURN command sends the program back to the GOTO 80, which begins generating a new problem.

Suppose the answer is wrong. The IF-THEN statement fails and the program falls through to line 170 (below). Line 170 increments the problem counter, prints an error message, and asks you to try the problem again.

```
170 P = P + 1: PRINT:PRINT " SORRY,  
THAT'S WRONG. TRY  
AGAIN.":GOTO 110
```

Now, let's write the correct-answer subroutine beginning at line 200. Again, we need to increment our problem counter, P. We also introduce a right-answer counter, R.

```
200 P = P + 1  
210 R = R + 1
```

Then, a nice congratulatory message should be printed.

```
220 PRINT:PRINT " RIGHT! TRY  
ANOTHER!"
```

And every subroutine needs a RETURN.

```
230 RETURN
```

Last, let's write the section that prints the score and ends the program.

```
300 PRINT:PRINT " SCORE: "R"RIGHT  
OUT OF"P - 1"TRIES"  
310 END
```

power BASIC

Color Lister

Bret M. Timmins

Use color to make your programs easier to debug. Versions of this handy utility are included for the Commodore 64, 128, and Plus/4 and 16.

When you write a long program, you probably break it up into small pieces—a sorting routine, a printing routine, an input routine. Your main program loop might even consist of distinct logical units. Perhaps the first section initializes variables, a second gets input, a third does a few calculations, and a fourth prints out the results.

Even though your program works in sections, when you type LIST, the entire program scrolls by in one monolithic chunk. Some programmers insert REM statements into their programs to help isolate the various sections. But when the program is scrolling by, it's all too easy to miss a REM command among the other text in the program.

Other programmers separate their routines by carefully choosing their line numbers. Perhaps the sort subroutine uses lines 6000-6099. But renumber your program, and all those carefully contrived distinctions disappear.

"Color Lister" makes it easy to identify the parts of your program. It lets you change the color of your program text at any point. You can use any of 16 colors as many times as you like. Color Lister is truly an unusual and useful debugging tool.

Typing It In

Color Lister is a small machine language program that is patched into BASIC's LIST routine. To make it easier to install, it's listed as a BASIC loader: You type it in, save it, and load it like a BASIC program. Be sure to use "The Automatic Proofreader," listed elsewhere in

this issue, when typing in Color Lister. The machine language itself is stored in DATA statements and one typo could crash the program. When you type RUN, the BASIC loader POKES the machine language program into memory. There are three versions of the program—one for the 64, one for the 128, and one for the Plus/4 and 16. Type in the program for your computer. Be sure to save a copy before running it.

Install Color Lister at the beginning of the programming session by loading the program and typing RUN. Then, type one of the following commands to turn Color Lister on:

Commodore 64	SYS 828
Commodore 128	SYS 2816
Plus/4 or 16	SYS 819

To see how Color Lister works, type NEW and then enter the following short program exactly as it is listed:

```
10 REMA  
20 PRINT"HELLO"  
30 REMB  
40 PRINT"GOODBYE"
```

Now type LIST. You'll see that the program is listed in two colors. To change colors, you must place the REM statement on a line of its own. The REM must be followed immediately by a number 1-8 or a letter A-H. The numbers represent colors 1-8, while the letters represent colors 9-16.

Color Lister survives RUN/STOP-RESTORE. To disable the program, type one of the following sets of commands:

Commodore 64	POKE 774,26:POKE 775,167
Commodore 128	POKE 774,81:POKE 775,81
Plus/4 or 16	POKE 774,110:POKE 775,139

See program listings on page 90. ■

Todd Heimarck
Assistant Editor

A few weeks ago, "Gazette Feedback" received the following letter: *I recently bought a 128D and I love it. I have a good many games, and every one of them was copied using a nibbler. In fact, I got my nibbler by using someone else's nibbler. They can save you a bundle of money. But I have a problem. My nibbler refuses to copy software copyrighted later than 1986. There are so many nibblers and file copiers available, it's so hard to tell which one's better. I'd hate to waste my money on something that isn't any better than what I already have, so could you please suggest a reliable nibbler? One tends to get confused after a while.*

To cut through the confusion, let's put it in very plain language: Duplicating and distributing copyrighted software that you did not buy is both illegal and immoral. It's the same as stealing. Copyright means the right to copy, and if you see a copyright message, you should not copy the software. Even just giving a copy to a friend is wrong. Furthermore, using one nibbler to copy another nibbler is like breaking into a locksmith's shop to steal a key so you can more easily steal a car.

People who illegally copy and distribute software are commonly called *pirates*. Most piracy occurs between individuals; one person copies a program and gives it to a friend.

Some time ago, we received a letter from a nun who taught programming in a parochial school. She said that in their curriculum, the students start programming in Logo in third grade, BASIC in fifth, and Pascal and assembly language in seventh grade. By the time students reached ninth grade, they were good enough (if good is the correct word) to crack commercial protection schemes and make

copies for the younger kids. She suggested that it's not enough to teach programming—that ethics should be part of a computer curriculum. Good point.

Enforcing The Law

Someone posed an interesting question on CompuServe: *If copying software is illegal, why don't the police enforce the law? But how? Even if there were such a thing as software police, they'd have to peek in windows to catch people making illegal copies. Or maybe they'd knock on doors, waving search warrants, demanding to inspect disks.*

The police don't usually get involved, except when the piracy occurs on a large scale, such as a software rental company or a bulletin board system (BBS). One software company recently put a bounty on pirate BBS's: \$200 cash or \$400 in software. Many pirates were uncovered. The company then filed a lawsuit against the parents of a minor child (the sysop of a pirate BBS) for failing to supervise the child's illegal activities.

The answer is not stronger law enforcement and lawsuits. To stop piracy, just say *no*. The next time someone asks if you want a copy of the hottest new game, say you don't believe in illegal copying.

When You Can Copy

Software falls into two broad categories: copyrighted and public domain. If you write a program and waive your copyright, saying anyone can have it free, then it's public domain. If you include a copyright message in the program, you control the right to make copies; the program is copyrighted. Shareware is a special case of copyrighted software: The author retains the copyright, but includes a message that it's OK to copy and distribute the software. He or she generally asks for a dona-

tion, too. Often, the people who pay will receive information about enhancements and upgrades.

There are thousands of Commodore programs in the public domain. They're available from user groups, computer stores, telecommunications services, bulletin boards, and other sources. Computer owners on a tight budget can satisfy their craving for new software without resorting to piracy.

Copying a program you own (for archival purposes) is generally considered legal, although some software agreements specifically prohibit this. For example, you buy a word processing program for \$100 and make a backup, in case you accidentally spill coffee on the disk or the dog decides to use it as a chew-toy. The backup is an archival copy. Copying *per se* is not piracy; giving away (or selling) copies is where piracy comes in.

Why Not Pirate?

Piracy is against the law; if you get caught, you may well end up in court.

But beyond the law, there's a moral question. If you work for a living, you expect to be paid for your time and expertise. Software authors have a job: They write programs. They're like composers, writers, or any other creative artist. Copyrights encourage artists to continue creating novels, songs, programs, and other works. Pirating software is like asking programmers to work for free.

But It Doesn't Hurt Anybody

Probably the most common justification for illicitly copying software goes like this: *Even if I had the money, I wouldn't have bought the program anyway. Thus, the software company didn't lose any money they might have made.* This argument ignores the fundamental rule of the market: The program is offered for sale and

you have the choice of buying or not buying. Imagine someone stealing an apple from a grocery store and then saying he wouldn't have bought it anyway.

The test-drive theory goes like this: *I copy software so I can test it out; if I like it, I'll buy it.* Too often, the test-drive turns into a cross-country trip—the tester never gets around to purchasing a legitimate copy (*I'll be done testing it by 1999*). In many cases, you can't test a program without the manual; you need the documentation to use the program to the fullest. If you really want to test out a program, you can use the original—at a friend's house or in a computer store. And you can read the reviews in magazines.

The most bizarre excuse is this one: *By copying software and giving it away, the pirate says he or she is providing free advertising for the author. It's a public service.* Someone might see the program and actually buy a copy. Proponents of this theory somehow don't realize that software companies advertise to reach people who *buy* software, not to reach people who give it away.

Many people think, "I'm just a drop in the bucket. It won't affect anyone if I make just one copy." Multiply that attitude by 50,000 and think of all those drops dripping into the bucket.

Any Answers?

The pirates who make excuses and try to justify their actions probably know what they're doing is wrong. Other people just don't know it's wrong, like our reader who was happy to discover he could save a bundle of money by copying programs.

Ironically, the more money you save by pirating software, the more you ultimately pay. Have you ever bought a program that's unsuitable for your purposes and then tried to return it for a refund? Most computer and software stores don't offer refunds. If they did, people would buy software, copy it, and get their money back.

Have you ever had a disk drive go out of alignment? You can probably blame copy-protection schemes that knock the drive's read/write head around—the woodpecker effect. If people didn't

pirate software, companies wouldn't feel it necessary to protect their disks.

Have you noticed how many software companies have gone out of business in the last five years? They just didn't sell enough software. Many of the survivors are known for their expertise at devising copy-protection techniques.

What do we do about piracy? If you have an opinion on this topic, send us a letter: Horizons/Piracy, COMPUTE!'s Gazette, PO Box 5406, Greensboro, NC 27403.

COMPUTE!
TOLL FREE
Subscription
Order Line
1-800-727-6937



V4.0

ULTRABYTE DISK NIBBLER

POWERFUL NEW GCR NIBBLER FOR COMMODORE 64 and 128 (in 64 mode)

- Automatically copies most disks in 2 minutes or less including variable density and rapid locked protection
- 105 new parameters to make unprotected copies of recent disks. Send stamped envelope for list
- Copies up to 40 tracks using 1 or 2 1541 or 1571 drives. Copies both sides on 1571
- Copies itself (for this reason, no refunds given)

**SPECIAL — BUY A NIBBLER V4.0 AND GET
YOUR CHOICE OF A FREE \$14.95 PROGRAM
\$39.95 plus \$4.00 shipping**

- | | |
|--|------------|
| 1. Disk Surgeon V2.0 -- new disk utility | \$14.95 |
| 2. Ultramail -- mail list and labels | } both for |
| Handy-Capper -- race handicapper | |
| 3. McMurphy's Mansion -- text adventure | } both for |
| Soluware -- solutions to 10 adventures ... | |

(Above may be ordered separately for \$14.95 plus \$4.00 shipping. Foreign orders add \$2.00)

Mastercard, Visa, Check or M.O., Calif. add 6.5% (\$2.60) sales tax. Foreign orders / COD add \$2.00. Payment must be in U.S. funds

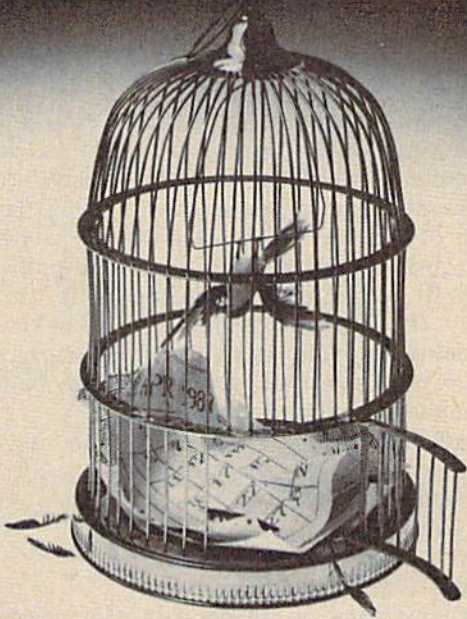
UPDATES - Return original Ultrabyte disk with \$15.00 plus \$4.00 shipping. Foreign add \$2.00. No free disk with update

To order, write or call 24 hr. order line. For info, write.

ULTRABYTE (818) 796-0576
P.O. Box 789 LaCanada, CA 91011 USA

DEALERS & DISTRIBUTORS WANTED

IS YOUR PRINTING OUTPUT



FOR THE BIRDS?

ML Cloner

Joseph Charnetski

*Copy machine language files the easy way with "ML Cloner."
For the Commodore 64, 128, Plus/4, and 16.*

BASIC programs are easy to move from one disk to another. You just load them from one disk and save them to the other. Some machine language programs load and save just like BASIC programs, so this procedure works with them as well. But how do you copy a machine language program that doesn't load and save like a BASIC program?

One solution is to use a high-speed file copier like "Disk Rapid Transit," published in the December 1987 GAZETTE. If you don't have such a program, "ML Cloner" will make the job a breeze. It's very small, saving you typing time and

disk space, and it's versatile—it works equally well on the Commodore 64, 128, Plus/4, and 16.

Getting Started

ML Cloner is written in BASIC. Type it in and save a copy to disk. When you're ready to copy a machine language program, type RUN. ML Cloner will prompt you for a filename. Enter the name of the file you wish to duplicate, and the file will be read into memory.

After the file has been loaded, the starting and ending addresses of the file are displayed, and you are asked whether you would like

to continue copying the file. Answer Y for yes, or N if you want to exit the program.

ML Cloner next asks whether you'd like to change the name of the destination file. If you answer Y for yes, you are prompted for the new filename. Be sure to change the name if you plan on making a copy to the same disk.

Insert the destination disk into the drive and press RETURN. The file will be written to disk. You are now asked whether you'd like to make more copies of the file. If you answer Y, you can make more copies of the file in memory. Otherwise, you'll be given the option of running the program again to copy a new file.

See program listing on page 92. ■

bug-swatter

Modifications and Corrections

• Several users have had trouble with "Needleworks Graphics Editor" (January GAZETTE). The problem stems from a preliminary version of the new MLX lister we are now using. Apparently, some of the files from the January issue were listed using the faulty version. The result is programs that won't run because they're missing a few bytes here and there.

Below is a short program that will repair your copy of Needleworks Graphics Editor. Type in the program and save a copy to disk just to be safe. Next, place the disk containing your copy of Needleworks Graphics Editor into the disk drive and type RUN. You'll be prompted for the name of the INPUT FILE. Type the filename you used to save

Needleworks Graphics Editor and press RETURN. You'll then be asked for the name of the OUTPUT FILE. Type a new filename for Needleworks Graphics Editor. Be sure the new filename is different from the old one. You'll now have a working copy of Needleworks Graphics Editor. Be sure to scratch any bad copies of Needleworks.

```
SB 100 OPEN15,8,15
RF 110 INPUT "INPUT {2 SPACES} F
    LE";IN$
HX 120 OPEN1,8,3,IN$+"P,R":GO
    SUB260
FJ 130 INPUT "OUTPUT FILE";OT$
JM 140 OPEN2,8,4,OT$+"P,W":GO
    SUB260
RR 150 GET#1,S$:GOSUB240:GET#1
    ,S$:GOSUB240
HM 160 PRINT "WORKING":A=2049
AM 170 GET#1,K$:F=ST
AP 180 IF A=2210 THEN S$=CHR$(
    176):GOSUB240
```

```
QR 190 IF A=3035 THEN S$=CHR$(
    6):GOSUB240:S$=" ":GOSU
    B240
QM 200 IF A=3813 THEN S$=CHR$(
    211):GOSUB240
AS 210 S$=K$:GOSUB240:IF F=0 T
    HEN170
CE 220 CLOSE1:CLOSE2:CLOSE15:P
    RINT "DONE"
GE 230 END
CK 240 S$=CHR$(ASC(S$+CHR$(0))
    ):A=A+1
CM 250 PRINT#2,S$;:RETURN
BX 260 INPUT#15,E,E$:IF E=0 TH
    EN RETURN
XM 270 CLOSE1:CLOSE2:CLOSE15:P
    RINT E;E$
```

We suspect a similar problem with "Delta War" from the same issue, but as we go to press, we have not been able to confirm our suspicions. If we do find a problem, we'll publish a correction in this column next month. ■

Hi-Res Screen Dump For The Plus/4 and 16

James Host

This machine language hi-res screen dump is a handy memory-resident utility for the Plus/4 or 16 and almost any Commodore-compatible printer.

One of the nicest features any computer can have is the ability to print its high-resolution screen at the touch of a key. On some computers this feature is built-in, but on Commodore eight-bit computers a hi-res screen dump must be user-programmed and wedged into the operating system. This program, "Screen Dump," adds a high-resolution screen-dump feature to the Commodore Plus/4 or 16 computer with any Commodore-compatible printer.

Getting Started

Because Screen Dump is written entirely in machine language, you cannot enter it directly into your Plus/4 or 16. Instead, type in "Dumpmaker," the program accompanying this article. This program contains the whole of Screen Dump in DATA statements. Be careful when entering the DATA statements and be sure to save a copy of Dumpmaker to disk before running it.

If you're using a tape drive, you'll need to change line 50 of the program so D = 1 since that's the device number for tape. If you're using disk, the program will work fine without any changes.

When you run Dumpmaker, you'll be asked if your printer is 1525 compatible. Answer Y if your printer is a Commodore 1525, an MPS-801 or 803, a "Commodore ready" dot-matrix printer, or if your printer's interface has a good 1525 emulation mode.

Answer N if your dot-matrix printer uses the standard ESC K code to turn on its single-density graphics mode and is connected to your computer with an interface. After answering this question, Dumpmaker will write Screen Dump to your disk or tape with the filename +4SCREENDUMP.

How To Use It

To dump a screen, reset your computer and then load and run Screen Dump just like a BASIC program. You'll get the usual BASIC READY prompt almost immediately. Now load and run any program that creates a high-resolution screen you'd like to print.

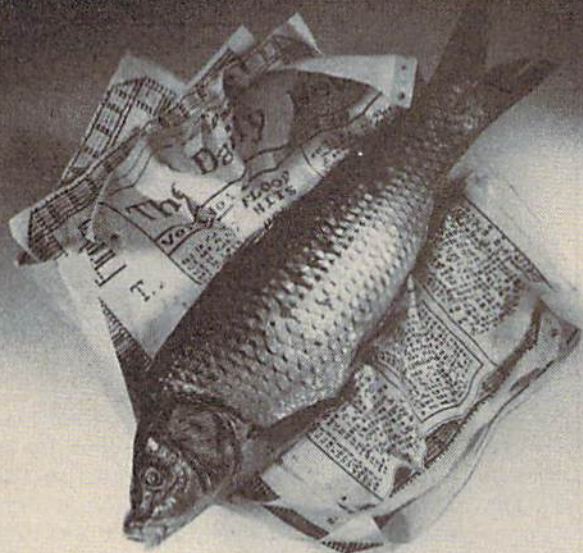
When the screen appears, press the Commodore and CTRL keys simultaneously and then release them. Your printer will come to life and print a hard-copy of the screen. After the printing is finished, control will return to your program where it left off.

Program Notes

Screen Dump occupies the bottom of BASIC storage and will work with many programs written in BASIC which create high-resolution screens. For the Commodore 16, however, some programs may run out of memory, which is already very limited when the 16's high-resolution screen is allocated.

See program listing on page 90.

DOES YOUR FONT SELECTION



STINK?

Big Screen

Robert Bixby

This amazing drawing program turns your 64 into a 640 × 400-pixel super graphics machine. You can create graphics, load and save them, edit portions of the screen by pixels, draw with a joystick or touch tablet, print, and much more. A disk drive and joystick are required. A touch tablet is suggested.



Very finely detailed graphics can be created with "Big Screen."

If you've ever felt constrained by the size of the 64's hires screen, "Big Screen" is for you. With it, your 64's drawing canvas is expanded to four times its usual size, encompassing an impressive 640 × 400 pixels. Graphics can be created and edited with Big Screen using either a joystick or touch tablet, then loaded and saved to disk, and they can be printed with either a Commodore 1525/MPS-801/803, a Star SG-10, or any printer compatible with either of these. If graphics is your game, Big Screen is guaranteed to spoil you.

Getting Started

Since Big Screen is written in machine language, you'll need to enter it with the "MLX" machine language entry program printed elsewhere in this issue. When you run MLX, you'll be asked for a starting and an ending address of the data you'll be entering. Here are the values to use for Big Screen:

Starting address: 0801
Ending address: 1DE0

Follow the MLX instructions carefully, and be sure to save a copy of the Big Screen data before you finish typing. After entering and saving a copy of Big Screen, it can be loaded and run just like a BASIC program.

Using Big Screen

Big Screen divides its 640 × 400 canvas into four quadrants of 320 × 200 pixels each. When you first run the program, you'll see the upper-left quadrant on your screen. This area will undoubtedly be filled with a random image produced by whatever happened to be in your 64's memory when you ran the program. No need to worry, though—it's easy to erase and edit the canvas.

Big Screen has four modes: *shell*, *zoom*, *joystick*, and *touch tablet*. When you first run the program, you're in shell mode. In this mode, you can load and save graphics, print graphics, clear the current quad-

rant, turn the screen into a negative image of itself, get a bird's-eye view of all four quadrants, get help, flip from quadrant to quadrant, scroll, and enter the other modes. Here's a summary of the shell mode commands:

L Loads a graphic from disk. While the graphic is loading, the screen turns red, then returns to its normal black-and-white image after the graphic is finished loading. If you change your mind after issuing either an S or L command, simply type RETURN when requested for a filename and you'll be returned to the shell.

S Saves a graphic to disk. Since each picture you create with Big Screen is 640 × 400 pixels—that's 256,000 bits or 32K—each drawing takes 130 disk blocks.

SHIFT-P Prints a graphic on a Commodore 1525/MPS-801/803 or compatible printer.

P Prints a graphic on a Star SG-10 or compatible printer.

SHIFT-CLEAR/HOME Erases the quadrant currently on the screen without changing the other three quadrants.

— The minus sign turns the entire 640 × 400 screen into a photographic-style negative of itself.

* This command gives a bird's-eye view of all four quadrants. You'll notice that the quarter currently on the screen will always occupy the upper-left corner of the picture when this command is invoked. Pressing any key will return to the shell.

CRSR ↑ ↓ ← → The cursor-control keys move from quadrant to quadrant.

Joystick You can use the joystick in shell mode to scroll the screen by 16 pixels horizontally and 8 pixels vertically.

M Provides a menu of commands for each mode.

K Enter touch tablet mode.

J Enter joystick mode.

Z Enter zoom mode.

RUN/STOP-RESTORE Exit Big Screen. If you exit by mistake, type RUN before doing anything in BASIC, and you'll reenter the program with your last drawing still in memory. If RUN doesn't work, you can reload and run Big Screen, and your last drawing should still be in memory.

Zoom Mode

Typing Z from the shell moves you to zoom mode where you can edit individual pixels. The 40 × 24-pixel area in the top-left corner of the visible hi-res screen is blown up to 64 times its apparent size and appears in the zoom window. Because you can smoothly scroll Big Screen with the joystick, any portion of the screen can be zoomed. This feature is also useful in designing brushes, discussed in the section on joystick mode, below.

In zoom mode, the cursor appears as a cross and is manipulated by the joystick. To place a pixel on the screen, type a period (.). You can erase with a comma (,) and return to the shell by pressing RETURN.

Joystick Mode

Plug your joystick into port 2 and press J to enter joystick mode. You'll see the border color change to remind you of the mode change. Typing a period (.) will cause your pen—an arrow-shaped cursor—to appear. To fill your pen with ink, press W. If you want to erase, press E. You can begin either drawing or erasing by pressing the plus (+) key. The minus (-) key stops the penpoint from drawing or erasing, making it safe to move the pen from place to place on the screen.

You can control the pen's speed with the equal-sign (=) key. Pressing (=) will give you extremely fast movement, SHIFT-(=) reduces the speed to half, CTRL-(=) reduces speed to one quarter, and Commodore-(=) reduces speed even further—slow enough for a meticulous artist. Be sure to release the equal-sign key first when using the SHIFT, CTRL, and Commodore combinations. If you don't, Big Screen will interpret the key combination as an unshifted (=). To exit joystick mode and return to the shell, press RETURN.

Defining A Brush

If you wish, you can change your pen to a brush by pressing D in joystick mode. Big Screen takes the 32-byte area in the upper-left corner of the screen (16 × 16 pixels) as the brush pattern. Before pressing D, you can create a brush pattern by drawing anything in this area with the joystick, or by using zoom mode to edit individual pixels. To return to the arrow-shaped pen, type a period (.). If you've defined a brush and want to return to it, press the slash (/) key.

In its default mode, the brush rolls across the canvas to allow you to fill a space with the defined pattern. If you prefer to smear the brush, press the joystick button while moving it. As with the penpoint, W provides the brush with ink, E with an eraser, (+) prepares to draw, and (-) stops drawing or erasing.

Touch Tablet Mode

Touch tablets provide one of the best input devices available for graphics on the 64. If you have a touch tablet (such as Koala Pad), plug it into port 1. To enter touch

tablet mode, press K from the shell. Notice that the border changes to black. In touch tablet mode, you can select brush or pen the same way you did in joystick mode, and you can use the joystick (still plugged into port 2) to scroll the screen. Press W to draw, E to erase. To begin drawing, press the left touch tablet button; to stop, release it.

Pressing the period (.) gives you a pen to draw with and (/), a brush. Pressing D selects the upper-left corner of the screen, as your brush, the same way it does in joystick mode. Unfortunately, the brush doesn't roll in touch tablet mode.

It is normal to see neither brush nor penpoint when you first enter the touch tablet mode. Select the drawing device with (/) or (.), and touch your finger to the tablet. The drawing device should appear.

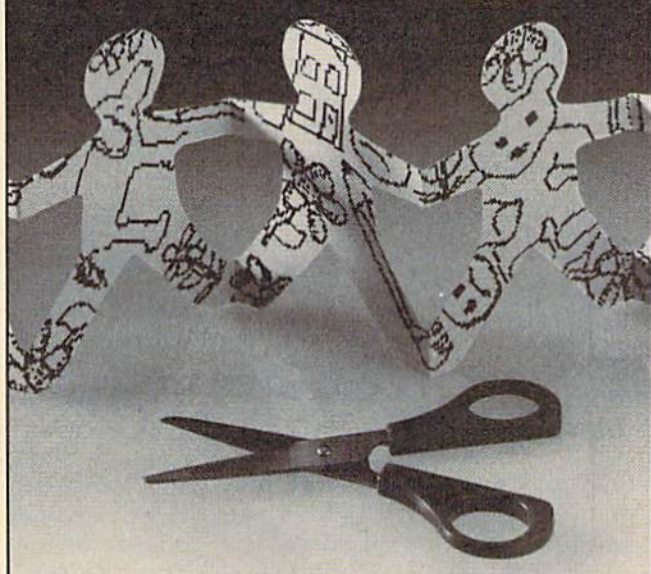
Be sure not to hold the left button down if your stylus is not on the touch tablet. After a second with no input, the pen or brush may leap to the upper-left corner and change your drawing. Release the left button and then remove your stylus from the touch tablet to avoid any unwanted surprises. To return to the shell, press RETURN.

Program Notes

Big Screen's 640 × 400-pixel canvas requires 256,000 bits—exactly half of the 64's available memory. To allocate this memory, Big Screen links together 8000-byte territories at 8192, 16384, 24576, and 32768. Big Screen itself is about 4K long and loads into the area of memory normally used by BASIC programs.

See program listing on page 81.

IS YOUR CLIP-ART



NAMBY-PAMBY?

Sketch Pad Plus

Forrest Bentley

Here's a companion program to "Sketch Pad," a full-featured drawing program for the 64 that was published in the November 1987 issue. Sketch Pad Plus adds seven new options to Sketch Pad's palette of drawing tools. A copy of Sketch Pad is required.

"Sketch Pad," a powerful graphics program published in the November 1987 issue of COMPUTE!'s Gazette, comes with a wide variety of drawing tools. Increasing this already impressive list, "Sketch Pad Plus" adds seven drawing functions to Sketch Pad's graphics repertoire: Ellipse, Diamond, Large Brush, Outlined Text, Screen Scrolling, Swap, and Zoom.

Upgrading Sketch Pad

To upgrade Sketch Pad, you need a disk that contains all of Sketch Pad's files: SKETCH-PAD MENU, SKETCH-PAD, SAVESKETCH, and PRINTSKETCH. To begin the update process, rename the BASIC file SKETCH-PAD MENU to SKETCH-PAD OLD. This can be done with the following command:

```
OPEN 15,8,15,"R0:SKETCH-PAD OLD=
SKETCH-PAD MENU":CLOSE 15
```

Next, load the program SKETCH-PAD OLD. We are going to modify this program so that it recognizes Sketch Pad Plus's new commands. Enter the following lines and save the resulting program as SKETCH-PAD MENU.

```
30 IFPEEK(52)<>32THENPOKE52,32
:POKE56,32:POKE252,86:CLR
90 POKE845,PR(1):POKE846,PR(2)
:POKE53287,PR(1):POKE646,PR
(1):PRINT"CLR":SYS32768
165 IFL=3THENL=4:LOAD"SKETCH-P
AD+",8,1
```

Now, it's time to type in Sketch

Pad Plus. Sketch Pad Plus is written in machine language, so you must enter it using "MLX," the machine language entry program listed elsewhere in this issue. When you run MLX, answer the prompts as follows:

Starting address: C2EC
Ending address: CF8B

After typing in the program, save a copy with the filename SKETCH-PAD+ on the disk containing Sketch Pad's files. When run, Sketch Pad Plus looks for the program with this filename.

Running Sketch Pad Plus is just the same as running Sketch Pad: Plug a joystick into port 2, turn on your 64, and load and run the file SKETCH-PAD MENU.

The "Plus"

The drawing tools added by Sketch Pad Plus are described below. These tools are available in Sketch mode only. Enter Sketch mode by pressing f1 from Sketch Pad Plus's menu.

Ellipse. To draw a circle or ellipse, press I. Four plus signs (+) appear, indicating the size of the ellipse. Move the joystick left or right to increase or decrease the horizontal size of the ellipse. Similarly, move the joystick up or down to increase or decrease the vertical size of the ellipse. Once you have the shape you want, press the fire button. Now, move the plus signs to where you want the ellipse drawn

and press the fire button again. An ellipse is placed onto the screen. To escape from this mode, press RETURN.

If you wish, you may rotate the ellipse before it is drawn. To rotate an ellipse, press a key, 1-9, prior to pressing the fire button for the last time. Pressing 1 rotates the ellipse 10 degrees, while pressing 9 rotates the ellipse 90 degrees. To fine-tune the rotation, use the + and - keys. These keys increase and decrease the rotation by one degree. To achieve a rotation of 45 degrees, for example, press 4 and then + five times. After selecting the rotation, press the fire button for that last time, and the rotated ellipse is placed onto the screen. Ellipses can be rotated a maximum of 90 degrees counterclockwise. You may not rotate objects clockwise.

Diamond. A diamond is a square that sits on its corner. To draw a diamond, press Q. Again, you are presented with four plus signs. Use the joystick to determine the shape of the diamond and press the fire button. Move to the desired location on the screen and press fire to draw the object. Diamonds can be rotated in the same fashion as ellipses (see above). To escape Diamond mode, press RETURN.

Large Brush. This option allows you to create a large square brush. To use this brush, press G. Four plus signs appear, allowing you to define the shape of the brush. After selecting the size of the brush with the joystick, press fire. Draw on the screen by holding down the fire button and moving the joystick. To return back to your

original brush, press RETURN. If you wish to erase using the large brush, enter Erase mode by pressing E before you press G.

The Large Brush makes erasing sections of the screen very easy. First, enter Erase mode by pressing E. Next, press G, expand the brush's size vertically or horizontally to create a large flat brush and press fire. Now, by moving along the screen with the fire button held down, you can quickly erase large sections of the screen.

Outlined Text. This tool gives Sketch Pad's Text mode the ability to generate outlined characters. To use it, simply press W before invoking Text mode with the T key. The W key acts as a toggle, so pressing W again returns characters to normal. You must exit Text mode with the f1 key before you can toggle Outlined Text on and off.

Outlined Text can come in handy for creating three-dimensional-looking characters. Simply type letters in normal mode, cursor back to the first letter, exit Text mode by pressing f1, move the pen up and left a few pixels, turn on Outline Text by pressing W, enter

Text mode, and retype your letters.

Screen Scroll. By using the cursor keys, you can move a drawing around on the screen. Any part of the drawing that moves off the edge of the screen is erased, so be careful. It is a good idea to create borders for your drawings last, just in case you accidentally hit a cursor key.

Swap. With Swap, you can have two sketches in memory at one time. When you press f5, the current screen is swapped with the one stashed in memory. When loading, saving, or printing a sketch, only the current screen—the one that's visible—is affected.

Using Sketch Pad's Transfer feature, you can copy objects from one screen to the other. Just press X for Transfer, select an area, press RETURN to exit Transfer mode, press f5 to Swap screens, and press N or M to transfer a normal or miniaturized copy to the alternate screen.

Zoom. To add detail to your pictures, Sketch Pad Plus offers a Zoom mode. You activate Zoom mode by pressing Z. A square area defined by four plus signs appears.

Move the square area over the section of the screen that you wish to edit and press fire. The selected area is enlarged to fill the entire screen (each pixel is enlarged eight times, creating a 40 X 25-pixel screen).

To edit this magnified view of your sketch, move the pen to a pixel that you want to change and press the fire button. If the pixel is on, it is turned off. If the pixel is off, it is turned on. To move the Zoom viewing area around the sketch, use the cursor keys. Press RETURN to restore your screen to normal. The Zoom selection square remains on the screen for you to use. If you wish to exit Zoom mode entirely, press RETURN again. Zoom mode is perfect for adding final touches to a detailed drawing.

Keep in mind that most of these drawing functions work in Erase mode as well as Draw mode; they simply erase instead of draw. For example, you may create an inverse ellipse by entering Erase mode and drawing—or in this case, erasing—an ellipse from a filled area of the screen.

See program listing on page 85. 

THE AMAZING NEW VOICE MASTER[®] Junior

... TURNS
\$39.95
YOUR COMPUTER
INTO A TALKING
AND LISTENING
SERVANT...

High-Tech hits again! Voice Master Jr. gives both speech output and voice recognition with this single hardware product! Your voice controls programs, or appliances, robots, and more with spoken commands. Verbal response back gives status, verifies, or requests your reply! Speech output and recognition patterns are recorded into memory with your voice. Programming is simple with new commands added to BASIC. Demo programs get you up and running quickly. A music bonus lets you write and compose musical scores merely by whistling the tune. Unlimited uses for fun, education, practical applications. Speech and recognition qualities the finest available. Truly a remarkable product you will love.

The Covox Voice Master Jr. comes complete with all hardware, software (5 1/4" floppy), and instructions for only \$39.95. 30-day satisfaction guarantee. One year warranty. (Add \$4 shipping and handling for USA, \$6 Canada, \$10 overseas.) Available for Commodore 64/128, Atari 800/800XL, 130XE. Specify when ordering. Visa, MasterCard phone orders accepted. Other enhanced Voice Master systems available for Commodore 64/128, Apple II + /IIe/IIc, IBM PC and compatibles.



Call or write today for FREE Product Catalog

COVOX INC. (503) 342-1271

675 Conger St., Eugene, Oregon 97402

UPGRADE TO OUTRAGEOUS PAGES!



Trade in yesterday's news for Outrageous Pages™—a new concept in creative page design, you get all the extras, all in one!

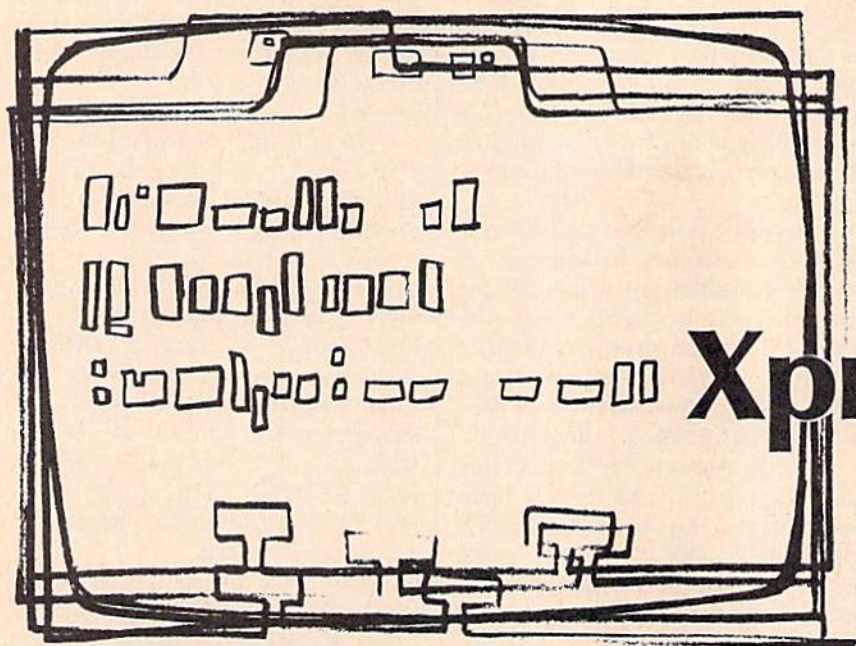
- Full-Page Paint/Print Program
- 50 Fabulous Fonts
- Powerful Text Formatting
- 80+ Art Pieces, Patterns & Borders
- Total Layout Flexibility
- Complete Printer Control

UPGRADE OFFER:

Save \$24 when you upgrade to Outrageous Pages with this special no-risk offer. Send check or money order for \$25.00, or Visa/MasterCard information, (plus \$3 shipping & handling) with the manual cover from your current C64[®] graphics program. We'll send you Outrageous Pages with a 30-day, money-back guarantee to ensure your satisfaction. No facsimiles. Send to: Electronic Arts, Outrageous Pages Upgrade, P.O. Box 7530, San Mateo, CA 94403. If you don't have a graphics program, visit your retailer and ask for Outrageous Pages.

C64 is a registered trademark of Commodore Electronics, Ltd. Outrageous Pages and Batteries Included are trademarks of Electronic Arts.

BATTERIES  INCLUDED



XpressCard 128

Robert Bixby

This compact 2K filing program allows you to store an amazing 116K of information in the 128's memory. You can enter and retrieve data, search records, load and save files, and more. A disk drive is required.

How much software do you have that takes full advantage of the 128's hidden memory? Concealed under the Kernal and BASIC ROM in the hi-res 80-column screen, and even overlaid on top of BASIC RAM, are cavernous reserves that ordinary programs rarely tap.

"XpressCard 128" is the electronic equivalent of a conventional card file that uses all the 128's available memory—up to 116.75K. With a system of easy-to-remember commands, XpressCard 128 allows you to perform wildcard searches, insert and delete records, save and load card files, and make printouts. And XpressCard 128 itself is barely more than 2K of machine language.

Since XpressCard 128 is written in machine language, you'll need to enter it with the "MLX 128" machine language entry program printed elsewhere in this issue. When you run MLX, you'll be asked for the starting address and ending address of the data you'll be entering. Here are the values to use for XpressCard 128:

Starting address: 1C01
Ending address: 24A8

Follow the MLX instructions

carefully, and be sure to save a copy of the XpressCard 128 data before you finish typing. Once you've saved a copy, the program can be loaded and run just as if it were a BASIC program. If you save the program with the filename XPRESSCARD, for example, you can start it by entering the command DLOAD"XPRESSCARD" followed by RUN, or simply RUN"XPRESSCARD". To make new copies of XpressCard 128, simply load the program into memory, change disks, and save it as you would a BASIC program.

Moving Around The Card File

After entering XpressCard, load it, and type RUN. Please note that XpressCard 128 works only in 40-column mode, so be sure the 40/80 DISPLAY key is not depressed, and that your monitor is adjusted for 40 columns.

The first thing XpressCard 128 does is present you with a file card numbered 001, in the upper third of the screen. This is the top card in a deck of 467—the maximum number of cards XpressCard 128 allows. The top six and a half lines of the

screen constitute the 255 characters of text each card can hold. The bottom third of the screen is used for buffer cards, and the number 00 at the beginning of this area is the current buffer card's number.

To move through the file, you use the F7 and F8 keys. F7 moves forward through the file, one card at a time, and F8 moves backward, one card at a time. The F7 key has a special added function—it saves the current card before it moves to the next. F6 is like a home command—it will return to card 001 from any point in the file.

Editing A Card

You may be surprised when you first run XpressCard 128 to find random characters on the cards. In its default mode, XpressCard 128 does not initialize memory. This means that whatever occupied the 128's memory locations previously appeared in the card's editing window.

Not initializing memory saves time, but you can, if you prefer, configure XpressCard 128 so that it *does* initialize memory and clear all the cards. All you need to do is exit the program with RUN/STOP-RESTORE, type

POKE 9192,*n*

where *n* is any number other than 47, and save the program, just like a BASIC program, with a new filename. Initializing memory will take

about ten seconds. To clear a single card press SHIFT-CLR/HOME.

Your position in the current card is indicated by the flashing underline cursor. You can enter text just as you would with a word processor. The cursor keys will move you around the card, CLR/HOME moves to the home position, and the INST/DEL key will delete text. You can use the SHIFT-INST/DEL key to create spaces in the text. If the text you're moving with SHIFT-INST/DEL scrolls off the current card, it will move into the buffer card at the bottom of the screen, so it isn't lost.

When you're typing, text will wrap around the end of a line but, unlike most word processors, the program won't find a word on which to break your text. The RETURN key is not implemented in the editing window, so, to move to the beginning of the next line, you can use the cursor keys, press the space bar until the cursor wraps around, or use CLR/HOME followed by the appropriate number of Cursor Down keystrokes.

Commands

XpressCard uses function keys and easy-to-remember keystrokes for its commands. Here's a complete summary.

F1. Moves forward through the buffer. Cards and other information, like search strings, can be stored in one of XpressCard's 64 buffers. These buffers are not saved to disk when the card file is saved, so be sure to transfer any important information from the buffer to cards in the file before you use the save command.

F2. Saves the card in the bottom third of the screen to buffer memory. (Information can be moved into the buffer from the top of the screen with SHIFT-RETURN.)

F3. Moves backward through the cards in the buffer.

F4. Clears memory from the current card through card 467. Before clearing the memory, you'll be asked if you're sure you want to do this. Answer the prompt with y to clear memory.

F5. This is XpressCard's special function command. You press F5 followed by another key to tell XpressCard which special function you wish to use. To indicate that you've pressed F5 and the com-

puter is waiting for a second key, the border color changes.

Here's a list of the keys used with the F5 prefix, along with a short description of each command.

P. Prints the cards from 001 to the card currently on the screen. Nonalphanumeric characters will print as spaces. The default is to print the card exactly as it appears on the screen. You can, however, alter the way XpressCard 128 prints by using the following procedure. Exit to BASIC by pressing RUN/STOP-RESTORE. In direct mode, type

POKE 9192,47:POKE 8944,x:POKE 8954,y:POKE 8959,z

The first POKE statement prevents the program from initializing and thus clearing your cards from memory. The number of characters to print from each card is indicated by x; y is the number of columns to print; and z is the number of lines to print between cards. After entering this line, type RUN to reenter XpressCard 128, move through the file to the last card you wish to print, and type F5 followed by P to print your file.

S. Saves the card file to disk from card 001 to the card currently on the screen. Data beyond the card currently on the screen is ignored, so be sure to move to the last active card in your file before issuing the save command.

L. Loads a card file from disk, stopping either at the end of the disk file or at the card currently on the screen, whichever is first. Thus, if you only want the first ten cards of a 200-card file, use F7 to flip to card 10, and then issue the load command.

If you want to load an entire file and you're not sure how many cards it contains, the safest thing to do is move to card 467 before issuing the load command.

F. Performs a position-sensitive search. Before searching, move to an empty card (if the card isn't cleared, use SHIFT-CLR/HOME to clear any unwanted characters from it). Now, type in the string you want to search for in exactly the same location within the blank card where you expect it to appear in existing cards.

You can use spaces in the search string as wildcards. For example, the search string S N (S fol-

lowed by a space, followed by N, in positions 1-3 on the card) would match the strings SANE, SUN, SON, and SAND, as long as these strings started each card. It would not, however, match the string ARSON, because the letters S and N appear in positions 3 and 5 on any card in which ARSON is the first word.

When you've entered the search string, press SHIFT-RETURN to copy it into the buffer at the bottom of the screen. Next, move to the card where you want the search to begin. To search through all the cards, for example, move to card 001. Press F5 followed by F to begin the search.

If XpressCard 128 finds a match, that card becomes the current card and is displayed at the top of the screen. To continue searching, enter F5 followed by F, and the search will continue from the current card. If no matches are found, you're returned to card 001.

SHIFT-F. Performs a string search that is not position-sensitive, but doesn't allow you to use spaces as wild cards. In this search, the space is treated as a delimiter—it marks the end of the search string. Thus, if you type FOR RENT (two words), XpressCard will use FOR as its search string, ignoring RENT, and will match words like INFORMATION, AFFORDABLE, BALFOR, and FORTITUDE. In this case, RENT, by itself, would find more appropriate matches. Choose your search string with care.

D. Deletes the card in the editing window at the top of the screen, storing its contents in the buffer. All cards above the current card are copied down into the next lower card. So, after deletion, the current card will contain the information previously stored in the next higher card.

Since all the cards above the current card must be moved during a delete, deletions of lower-numbered cards take longer than higher-numbered ones.

I. Inserts a card exactly like the current card into the next card's place. All the cards after the inserted card are moved up to make room for the new one. You can clear the inserted card (with CLR/HOME) or fill it with the contents of the buffer. Be careful using insert when card 467 contains information you don't want to lose. Since insert moves all

the cards after the inserted card upward, card 467, being the last card in the file, has nowhere to go, and any information on this card will be lost.

R. Replaces the current card's contents with the contents of the buffer card displayed at the bottom of the screen. This command is handy for making multiple copies of a card, to use as a template, for example.

↑. This is the up-arrow key located to the left of the RESTORE key on the 128's keyboard. This command, and the three that follow, allow you to move quickly to certain points in the card file. With these commands, plus F6—which moves to card 001 from any point

in the file—you're never too far from any specific card. Up-arrow by itself (↑) moves to card 87 from anywhere in the file.

SHIFT-↑. Moves to card 210.

Commodore-↑. Moves to card 329.

Control-↑. This combination moves to card 166 if the current card is 217 or lower, and to card 416 if the current card is above 217.

RETURN. Returns to editing mode without executing any command. If you type F5 and then change your mind, pressing RETURN cancels F5 mode.

F6. Moves to card 001 from any point in the file.

F7. Moves through the card file in a

forward direction and saves the current card to memory before it moves to the next.

F8. Moves backward through the card file. Unlike F7 it does not save the current card to memory.

SHIFT-RETURN. Moves the contents of the current card—displayed in the editing window at the top of the screen—to the buffer located at the bottom of the screen.

SHIFT-CLR/HOME. Clears the contents of the current card.

RUN/STOP-RESTORE. Exits to BASIC. It's best to save your card file before you exit. However, if you've exited XpressCard 128 and want to reenter it without losing your data, you can type

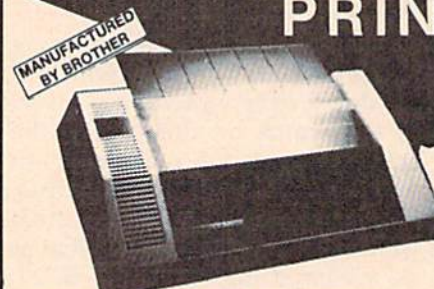
POKE 9192,47

followed by RUN, and reenter the program with your data still in memory.

See program listing on page 87. ■

COMMODORE®

PRINTER



MANUFACTURED BY BROTHER

FOR YOUR VIC20, 64, 64C, C128, PLUS 4, AND SX-64

LETTER QUALITY DAISYWHEEL

(WE CARRY FULL LINE OF STAR, COMMODORE, SEIKOSHA, AND OKIDATA PRINTERS) *With Purchase of Extended Warranty

MONITORS



\$149⁹⁵

COLOR COMPOSITE

1902 RGB *\$219
MONOCHROME \$ 79
RGB COLOR \$179

*With Purchase of Glare Guard

MODEMS



\$78⁹⁵

AVATEX 1200
1200/300 BAUD
100% COMMODORE
COMPATIBLE

TRANSCOM \$138
ANCOR \$129
300 Baud Commodore \$29

*With Purchase of RS-232

DISK DRIVES



\$138

1541
COMMODORE

*With Purchase of Extended Warranty

FSD-OC \$159 1571 \$278
ENHANCER 2000 \$99 Disk Head Cleaners \$9.95

COMPUTER



\$99

C64

*With Purchase of Extended Warranty

C128 *\$239
64C \$188
VIC20 \$79
Plus 4 \$88
Apple/Laser \$395
IBM Amstrad \$489

64 POWER SUPPLY



\$29⁹⁵

C-64

VOICE SYNTHESIZER



\$79

Command Your Computer by Voice
Computer Music by Autotune
Software Included FOR 64/128

MOUSE



\$34⁹⁵

Mouse with cord
Mouse with cord
Mouse with cord
Mouse with cord

JOY STICK



\$9⁹⁵

WHEN BUYING 2 JOYSTICKS

DATA SET



\$29⁹⁵

SURGE PROTECTOR



\$19⁹⁵

PROTECT YOUR COMPUTER FROM LIGHTNING AND POWER SURGES

ACCESSORIES

Disks (100 lots)	36c	Hot Shot Parallel	\$49
Floppy Disk Filter	\$5.95	2 for 1 Cable	\$24.95
RS-232C	\$45	Companion Cable	\$5.95
Light Pen	\$45	Disk Wiper	\$5.95
Tilt & Swivel Power Center	\$29	Print Element Cleaner	\$11.95
Fast Load Cartridge	\$29	Screen Cleaner	\$5.95
Final Cartridge III	\$49	Dust Covers	\$5.95

OPEN 7 DAYS A WEEK AND EVENINGS

1-800-345-5080

QUICK DELIVERY

PRO TECH TRONICS 215 W. Main St. New Prague, MN 56071 (612) 758-6268

Can Your Computer Make YOU \$1,000,000?

WITH LOTTERY PC YOUR NEXT TICKET COULD BE WORTH MILLIONS!

LOTTERY uses the raw power and storage of your computer to determine and refine the number selection methods that will win the various lottery games you play. Don't be limited to the one or two methods that other programs use, they might not work in your state. There is no better system available!

Join the growing list of winners using our system.

SPECIFY

Lottery 64(C64/128) • Lottery +4(Plus/4)
Lottery ST (Atari) • Lottery PC
IBM PC/XT/AT and compatibles

Commodore 64/128 & Plus/4 are registered trademarks of Commodore Int.
IBM PC/XT/AT are registered trademarks of International Business Machines Inc.
Atari ST is a registered trademark of Atari Corp.

To order, send \$29.95 for each plus \$3.00 postage & handling per order to:
(Illinois residents add 6% sales tax)
(Orders outside North America add \$3.00)




C.O.D. orders call:
(312) 566-4647



Superior Micro Systems, Inc.
P.O. Box 713 • Wheeling, IL 60090



Basically Music

A Complete Composition Tool For The 64

Greg Tarr

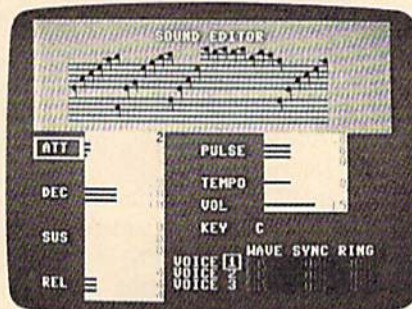
Never before have we published a music program so powerful and easy-to-use. "Basically Music" adds commands to BASIC, allowing for simple but complete control over the 64's sound chip. If you're interested in writing music for your programs—or just for your own enjoyment—"Basically Music" offers just what you need—and more.

With its synthesizer-like SID chip, the 64 is among the most powerful of all microcomputers in the category of music and sound effects. Unfortunately, this audio power is not easy to control. From BASIC, it takes several PEEKs and POKes (and a little blind luck) to get just the effect you want. The very best sound effects require careful machine language programming.

"Basically Music" is designed to help programmers and nonprogrammers alike make music. Several music commands are added to BASIC, allowing you to avoid tedious, direct programming of the SID chip's registers. When you've finished composing your song, you can use the built-in sound editor to adjust each of the three voices (the SID chip can play three notes at a time—one through each voice). Best of all, you can compile your songs into small machine language files and have them play in the background, as other programs run.

Getting Started

Basically Music is written entirely in machine language so, use "MLX," the machine language en-



"Basically Music" offers a wide range of features, including a sound-editing screen.

try program located elsewhere in this issue to type it in. When you run MLX, you'll be asked for starting and ending addresses. Respond with the following values:

Starting address: 0801
Ending address: 2000

After you've entered all of the machine language data, be sure to save a copy of the program with the name BAS-MUS before exiting MLX.

To use Basically Music, type `LOAD "BAS-MUS",8` and then type `RUN`. The `RUN` command adds the new commands to BASIC, initializes the SID chip, performs a

few memory-management tasks, and then returns control to you. At this point, you have a version of BASIC with several new music-related commands.

Program 2, "Music Demo—Für Elise," is written in BASIC. Since it includes the Basically Music keywords, be sure that Basically Music is installed before you type in the program. Save the program before running it.

The Music Command

The first new command is `MUS`. It lets you play up to three notes in a single command. Its syntax is `MUS note1,note2,note3,duration`. Here's an example program line:

```
10 MUS C4,E4,G4,4
```

This line plays a chord consisting of three notes—a fourth-octave C, a fourth-octave E, and a fourth-octave G. The final number, 4, specifies the duration. In general, try using a duration of 1 for sixteenth notes, 2 for eighth notes, 4 for quarter notes, and so on.

There are two ways to indicate rests with the `MUS` command. The first is to use a statement of this form: `MUS,,,duration`. This command does nothing but wait for the number of counts specified by *duration*. `MUS X,X,X,duration` does nearly the same thing, but it shuts off all three voices.

All three forms of the `MUS` statement can be used together.

Here's an example:

MUS C4,X,4

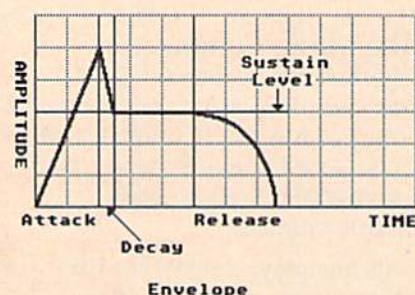
When this command is executed, voice 1 will play a fourth-octave C note, voice 2 will be shut off, and voice 3 will be left unaltered.

The MUS command also lets you specify sharps and flats. Use the # symbol to raise the note a half-step (a sharp) and use a £ symbol to lower the note a half-step (a flat). If you choose to use it, the sharp or flat sign follows the octave number. An example: MUS,,G3#,2.

Controlling The Sound

Several of Basically Music's commands are used to control the way the three voices sound. These commands do their work by manipulating certain SID registers.

The most basic of the commands are the ADSR commands—ATT, DEC, SUS, and REL (ATTack, DECay, SUStain, and RELease). The ADSR commands are used to shape the *envelope* (and thus the sound) of selected voices. The accompanying figure shows a typical sound envelope. The format for each of these commands is COMMAND *value for voice 1, value for voice 2, value for voice 3*. For each command, these values can range from 0 to 15.



The ATT command specifies the duration of the attack phase of the note. Using 0 will result in an attack of 2 milliseconds. Using 15 gives an attack of 8 seconds. The DEC command gives the duration of the decay phase. A 0 will make the decay 6 milliseconds. A 15 results in a decay of 24 seconds. The SUS command is used to change the volume at which the note will play after the attack and decay phases have passed. Volumes range from 0 (nearly inaudible) to 15 (maximum volume). Finally, the REL command is used to choose the length of the release phase of the

Basically Music Commands

Command	Parameters	Values
MUS <i>v1,v2,v3,d</i>	notes, duration	C0-B7, integer
ATT <i>v1,v2,v3</i>	voices	0-15
DEC <i>v1,v2,v3</i>	voices	0-15
SUS <i>v1,v2,v3</i>	voices	0-15
REL <i>v1,v2,v3</i>	voices	0-15
RING <i>v</i>	voice number	0-3
SYNC <i>v</i>	voice number	0-3
PULSE <i>v1,v2,v3</i>	voices	0-15
VOL <i>v</i>	volume	0-15
SPEED <i>n</i>	speed	0-255
KEY <i>k</i>	key	any note name
FOLLOW <i>v1,v2</i>	voices	1-3, 1-3 (0 = off)
OCTAVE <i>v1,v2,v3</i>	voices	-8-6
SHIFT <i>n</i>	half-steps	0-11
WRITE <i>fn</i>	filename	any legal filename
KILL	none	
SCREEN	none	

envelope. A 0 gives a release of 6 milliseconds, while a 15 makes the release last 24 seconds.

The other control commands are VOICE, PULSE, RING, SYNC, VOL, and SPEED. Each of these commands modifies a different aspect of how a note will sound. For more detailed explanations of the SID chip's functions, see your *Programmer's Reference Manual* or *COMPUTE! Books' Mapping the 64*. For musicians who just want to know how to use the SID chip but don't need to know how it works, *All About the 64, Volume 2*, also from *COMPUTE! Books*, may be a better reference.

The VOICE command is used to select the waveforms for the SID's three voices. Here is a list of the different waveforms you can use in the VOICE command:

- 1 Triangle
- 2 Sawtooth
- 3 Pulse
- 4 Noise

You can choose a different waveform for each of the SID's three voices. For example, VOICE 1,2,2 sets voice 1 to a triangle wave and voices 2 and 3 to a sawtooth wave. Setting a voice's waveform to 0 turns the voice off.

The PULSE command is used to select the pulse width for a voice. The PULSE command is useful only if the pulse waveform is selected. Pulse width is normally a two-byte value, but PULSE affects only the high byte of the SID's pulse-width register. This is not really a limitation for music. If you need finer control, you can still set the

registers with the POKE statement.

With the SID, you can have one voice modify the other through synchronization or ring modulation. Basically Music has two commands to allow you to use these features: RING and SYNC. The RING and SYNC commands each take only one parameter, the voice number 1, 2, or 3. Selecting voice 1 will combine the output of voices 1 and 3, either through synchronization or ring modulation. Selecting voice 2 will combine the output of voices 2 and 1, and selecting voice 3 will combine the output of voices 3 and 2. A 0 value turns ring or sync off. Please note that the RING commands work only with the triangle waveform.

The VOL command sets the overall volume of all the voices. A volume of 0 is nearly silent, and 15 is maximum volume.

The SPEED command is used to set the tempo of the music. Unlike tempo markings in music, the higher the value, the slower the pace of the music. Basically Music defaults to SPEED 4 if you forget to set it.

Advanced Music Commands

Basically Music contains several powerful commands that make it even easier to write music. These are the KEY, FOLLOW, SHIFT, and OCTAVE commands.

Use the KEY command to declare a musical key. All following notes (until the next KEY command) will be adjusted up or down a half-step to fit into the key you specified. All 15 standard keys are

supported, and Basically Music automatically converts nonstandard keys like A-sharp to their standard equivalents—in this case, B-flat. The KEY command can be overridden by specifying the letter N (Natural) after the note name. Here's an example:

```
10 KEY G
20 MUSD3,F4,A4,4
30 MUSD3,F4N,A4,4
```

In line 20, the F4 becomes a F4# to fit into the key of G. The result is a D-major chord. In line 30, the KEY command is overridden and a D-minor is played (the F note is not sharpened; rather, an F natural is played).

Many pieces of music have sections that are repeats of another section, but with one or two subtle differences (a good example is the demo, Program 2). The FOLLOW, SHIFT, and OCTAVE commands were included to allow you to change the sound of the music within FOR-NEXT loops.

The FOLLOW command causes one voice to follow another. The format of this command is FOLLOW leader,follower. This is a convenient way to make two voices play in unison. Use this command after an IF statement to make the voice follow only once during the loop. Example:

```
10 FOR I=1 TO 2
20 IF I=2 THEN FOLLOW 1,2
30 REM MUSIC COMMANDS HERE
40 NEXT I
```

In this case, the music commands in line 30 are played twice. The first time through the loop, voice 1 and voice 2 play independently. The second time through, voice 2 follows the notes that voice 1 plays. Turn off FOLLOWing with the command FOLLOW 0.

The OCTAVE command is used to shift the voices up or down by the indicated number of octaves. The command OCTAVE 1,-1,0 shifts voice 1 up one octave, voice 2 down one octave, while voice 3 does not change.

If you need to transpose a song up or down, you'll appreciate the SHIFT command. It shifts all three voices up in half-step increments. To transpose a song up in pitch, just indicate how many half-steps to shift. If you need to shift a song down, you'll have to use the OCTAVE command to move to a lower

octave and then use SHIFT to raise the frequencies from there. For example, to move a song down two half-steps you would use the following commands:

```
OCTAVE -1,-1,-1:SHIFT 10
```

The Sound Editor

Basically Music features a sound-editing screen. Turn it on by placing the command SCREEN at the beginning of your program. With the editing screen enabled, you'll see your music appear on musical staves. As your tune scrolls by, you can adjust the sound with the following keys:

```
f1 move parameter pointer
f3 move voice pointer
f5 raise value of selected parameter
f7 lower value of selected parameter
V change voice
R toggle ring modulation
S— toggle synchronization
```

As you change the parameters, listen to the differences in the music. When you have just the sound you want, copy down the values shown on the screen and place them into your program with the appropriate Basically Music commands.

Compiling Your Song

After you've finished your song, you can include it as a subroutine in your own BASIC program. For even more flexibility, Basically Music includes a compiler to turn your song into a machine language program that can play in the background as you run other programs.

To create a compiled version of your song, place the command WRITE "filename" at the beginning of the program. Filename can be any legal filename that does not contain a space character. Place the command KILL at the end of the music. Type RUN. The music will be saved to disk as an object file.

While the music is compiling, printing to the screen is not allowed. If you have any PRINT statements in your program, be sure to remove them before compiling.

To hear your song, reset the computer by typing SYS 64738. Now type LOAD "filename",8,1. Enter POKE 56,125:CLR. This protects the memory used by the machine language file. To play the music, type SYS 32000. Your song will play in the background until the SYS is repeated to toggle the song off.

Memory Management

If you use the FRE(0) function to check the amount of available memory, you'll see that Basically Music occupies a sizable chunk. Much of this is due to the hi-res screen Basically Music uses for the sound editor.

Basically Music is tucked in neatly beneath screen memory. From the programmer's perspective, this is a useful place to have it. Basically Music is designed to facilitate mixing music with graphics.

Compiled music programs are placed right above screen memory. This leaves the small area below the screen for any of your own machine language subroutines. To use Basically Music with hi-res graphics, raise the bottom of BASIC text memory up to cover the music subroutine. This can be done with the following statement:

```
POKE 44,125+size:NEW
```

Size is the number of disk blocks shown in the directory.

See program listings on page 77.

Precision Data Products™
Complete Line of Quality Supplies for Your Computer

Quality Printer Ribbons

Commodore 1525	\$5.45ea.
Commodore 1526	\$5.95ea.
Commodore MPS 801	\$3.95ea.
Commodore MPS 803	\$4.95ea.
Commodore 8023	\$4.25ea.

Minimum 12 Ribbons. S&H: 25c per ribbon.

- Sturdy Blank PVC Jacket
- With ID Label
- With Write Protect Tabs
- With Envelopes
- In Factory Sealed Poly Packs

SOLD IN LOTS OF 100

MADE IN U.S.A.

5" DISKETTES

DSDD
33c
each

DSHD
89c
each

3 1/2" DISKETTES SALE 99¢
(UNBRANDED) SOLD IN LOTS OF 50

S&H: \$4.00, FIRST 100 OR FEWER DISKS; \$3.00, EACH SUCCEEDING 100 OR FEWER DISKETTES.
MINIMUM ORDER: \$25.00. S&H: Continental USA.
Foreign Orders, APO/FPO, please call. MI residents add 4% tax. C.O.D. add \$4.00; payment with cash, certified check or money order. Prices subject to change. Hours: 8:30 AM—7:00 PM ET.

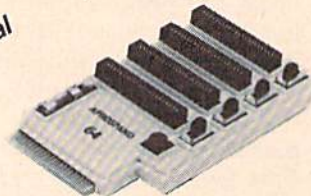
Computer Supplies at Budget Friendly Prices!
Call for FREE CATALOG
FOREIGN INQUIRIES WELCOME!

Precision Data Products™
P.O. Box 8367, Grand Rapids, MI 49518
(616) 452-3457 • FAX: (616) 452-4914
Michigan 1-800-632-2468
Outside Michigan 1-800-258-0028

PRICE & QUALITY YOU CAN DEMAND IT FROM OTHERS— BUT YOU CAN EXPECT IT FROM APROTEK

Aprospand-64™ Gives your Commodore 64 or 128 full expandability! This superbly designed expansion module plugs into the expansion port and gives you four switchable (singly or in any combination) expansion connectors—plus fuse protection—plus a reset button! Before you buy an expander, be sure that it has a fuse to protect your computer and that you can activate your cartridges in any combination allowed by the cartridges.

The
Original



Fully
C-128
Compatible

ONLY \$29.95 + S&H

Order #5064

UNIVERSAL RS-232 INTERFACE

with Commodore USER Port expansion. ONLY \$39.95+S&H

Now you can connect and communicate with any of the popular RS-232 peripherals using your Commodore USER Port. This superb expander opens a whole new world to your Commodore computer's capabilities. You can now connect to printers, modems and any other RS-232 device. If you already have something that connects to the USER Port, don't worry because the port is duplicated on the outside edge of the interface. Simply plug it in and turn on the device you want to communicate with. Comes complete with sample driver program listings. Compatible with all Commodore home computers with a USER port. 1-year warranty. Order #5232.



NEW! "COM-MODEM" ADAPTER — Use any Hayes® compatible modem with DB-25 connector through your USER port. You can make it emulate a 1670 too, or turn it off entirely. Can be used with our other USER port equipment such as "USER EXTENDER" (#5250) or "UNIVERSAL RS-232 INTERFACE" (#5232).

Order #5100 \$18.95 + S&H

"EXTENDER-64" — 10" Ribbon cable extender for your Commodore CARTRIDGE port. Used with Aprospand-64.

Order #5065 \$19.95 + S&H

"USER EXTENDER" — 10" Ribbon cable extender for your Commodore USER port.

Order #5250 \$21.95 + S&H

Commodore Interfaces and Cables

Cardprint G-WIZ Printer Interface #1108	\$39.95
Commodore 6 Pin Serial Cable (5 ft) #3006-5MM	\$ 7.95
Commodore 6 Pin Serial Cable (8ft) #3006-8MM	\$ 9.95
Commodore Serial Ext. (5 ft) #3006-5MF \$7.95, (8 ft) #3006-8MF	\$ 9.95
Amiga Printer Cable (6 ft) #3040-6MF, \$12.95, (10 ft) #3040-10MF	\$16.95
Centronics Parallel (6 ft) #3036-6MM, \$12.95, (10 ft) #3036-10MM	\$14.95

Shipping per each above item: Cont. US = \$3. Can, PR, HI, AK, APO, UPS Blue = \$6

ORDER INFORMATION California residents add 6% tax. All prices are cash prices—VISA and MC add 3% to total. We ship the next business day on money orders, cashier's checks, and charge cards. A 14-day clearing period is required for checks. Prices and availability subject to change—CALL. Available at Selected Dealers. Dealer inquiries invited. 2 week satisfaction or your money back trial period on all products.

For information and in Calif. call 805/987-2454 (8-5 PST)
TO ORDER CALL TOLL FREE

1 (800) 962-5800 - USA (7-6 PST)

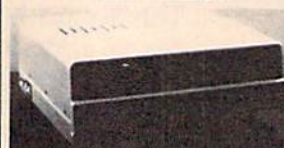
Or send order to:



APROTEK

Dept. CG
1071-A Avenida Acaso
Camarillo, CA 93010

TAKE COMMAND WITH THE NEW AND IMPROVED COMMAND CENTER



128 . . .	\$124.95
64 . . .	109.95
64C . . .	109.95

Accessories:

Dust Cover -	19.95
Keyboard Cover -	19.95
Drive Reset -	14.95
Tilt-Swivel Monitor Stand -	14.95
Serial Cable -	9.95
Cartridge Port Ext. Cable -	24.95
Modem Switch -	9.95

-KETEK

P.O. Box 203, Oakdale, IA 52319

For faster service, call
1-800-626-4582 toll free
1-319-338-7123 (IA Residents)

Shipping and Handling

Continental U.S.	\$4.50 for each Command Center
	\$2.00 for one accessory item
	\$3.00 for two or more accessories



Just look at these features:

- Built-In Power Strip with surge and noise protection
- Built-In Cooling Fan
- Modular Phone Plug with Switch (optional on 64 & 64C)
- Master Power Switch
- Compatible with Single or Dual Drives

Data Director

\$39.⁹⁵

- Eliminates Cable Swapping
- Shares 2 6-pin Serial Devices
- LED Indicator Lights
- Reset Button

APO/FPO/Canada/Puerto Rico/ Hawaii/Alaska

\$13.00 for each Command Center
\$ 4.00 for one accessory item
\$ 6.00 for two or more accessories

Label Maker™

by
KEYSTONE SOFTWARE

Includes
500
Labels

NEW!!

PRINT LABELS FROM
YOUR COMMODORE 64

Label Maker™ - A program designed specifically for making labels. No need to get out the ruler - Label Maker does it all for you with pre-designed layouts for: Standard - Envelopes - Audio Cassette - File Folder - Floppy Disk & 5 more and YES we also sell the labels.

Includes a "what-you-see-is-what-you-get" screen display, edit, "freeze" areas, set a printing increment counter, and print as many copies as you need.

Plus a built-in **Database Merge Utility** gives you complete control with files from your database or word processor.

EASILY MERGE DATA FROM:

- Consultant
- Data Manager 2
- Data Manager 128
- Easy Script
- Fleet Filer
- Fleet System
- Paperclip
- Superbase
- & Others

ONLY \$29.95
(add \$4 Shipping
& Handling)

Cheatsheet Products, Inc.

P.O. Box 111368 Dept. G, Pgh. PA 15238

(412) 781-1551

(800) 334-2896

BEFORE TYPING . . .

Before typing in programs, please refer to "How To Type In COMPUTE!'s GAZETTE Programs," elsewhere in this issue.

Basically Music

See instructions in article on page 73 before typing in.

Program 1: Basically Music

```
0801:0F 08 0A 00 9E 28 32 30 06
0809:39 30 29 3A A2 00 00 00 9F
0811:28 A9 80 20 90 FF 4C 90 5F
0819:09 00 AA B1 91 B3 22 00 BD
0821:00 00 4C 00 00 00 04 00 C2
0829:00 4C 80 09 08 19 16 00 BD
0831:0A 76 A3 00 00 00 00 00 58
0839:06 42 4D 55 53 49 43 2C 4E
0841:53 AA AA AA AA AA AA AA A5
0849:AA 08 00 03 01 D7 01 00 4A
0851:60 14 1D 8B 2B 03 FF 10 68
0859:06 00 00 00 00 00 AA 14 D5
0861:00 00 00 00 00 01 08 C3 49
0869:00 03 04 00 00 04 1B 00 01
0871:00 00 00 D8 00 0A 03 00 3D
0879:00 01 00 14 00 00 00 2E 3A
0881:45 4E 44 20 20 20 20 20 34
0889:20 52 54 53 20 4B 45 59 10
0891:54 41 42 2C 58 34 35 2C 51
0899:31 34 37 2C 31 37 39 2C FD
08A1:31 38 33 2C 32 34 37 2C 7E
08A9:32 35 35 2C 30 2C 30 3E 5A
08B1:41 54 54 31 36 46 49 4C BE
08B9:4C 45 53 4F 54 45 53 36 35
08C1:2C 32 35 35 2C 32 35 35 38
```

```
08C9:2D 08 20 C6 FF A9 0D 42 E5
08D1:4D 55 53 49 43 20 20 D7
08D9:20 20 20 20 20 20 E9
08E1:20 20 20 30 08 A9 04 AA AA
08E9:A0 FF 20 BA FF A9 00 20 C0
08F1:BD FF 20 C0 FF 20 7D 0D 79
08F9:A9 0D 20 D2 FF A9 07 A2 AA
0901:08 00 00 8C 1D 00 C3 45 95
0909:4E 44 20 20 20 54 2C 53 57
0911:53 57 A0 08 A9 02 20 60 2D
0919:F4 0E 54 45 20 23 23 20 FB
0921:5C 5C 5C 5C 5C 20 20 7E
0929:20 20 31 2E 30 08 C8 C0 50
0931:0E D0 F5 20 E4 0C 20 CC A3
0939:FF A9 08 AA A8 20 BA D8 75
0941:00 D8 00 D9 00 00 00 D8 FF
0949:4E A5 1C 90 03 9D F4 0E FE
0951:CA CA 18 4E A5 1C 90 03 25
0959:9D F4 0E 0E CA CA 18 88
0961:42 4D 55 53 49 43 2E 4F CA
0969:42 4A 2C 53 2C 57 A9 AA A6
0971:A0 15 0E 00 84 6B 88 00 BD
0979:9C 00 9C 6B 88 44 12 EA 88
0981:A9 48 85 2C A9 00 8D 00 56
0989:48 AD 08 03 8D A0 03 AD FE
0991:09 03 8D A1 03 A9 6A A0 E8
0999:0A 8D 08 03 8C 09 03 A9 7D
09A1:5A A0 1B 8D 04 03 8C 05 8F
09A9:03 A9 70 A0 1C 8D 06 03 E5
09B1:8C 07 03 20 BA 10 20 81 06
09B9:FF A2 00 BD E6 09 20 D2 BE
09C1:FF E8 E0 50 D0 F5 A2 00 D2
09C9:BD 36 0A 9D 00 D4 BD 3D 6F
09D1:0A 9D 07 D4 BD 44 0A 9D 2F
09D9:0E D4 E8 E0 07 D0 E9 A9 4C
09E1:0F 8D 18 D4 60 11 20 20 D6
09E9:20 20 2A 2A 2A 20 20 56
09F1:42 41 53 49 43 41 4C 4C 78
09F9:59 20 4D 55 53 49 43 20 26
0A01:56 31 2E 30 20 20 2A 2A 55
0A09:2A 2A 0D 11 20 43 4F 4D 69
0A11:50 55 54 45 21 20 31 39 A6
```

```
0A19:38 38 20 2D 20 32 32 35 91
0A21:32 38 20 42 41 53 49 43 B1
0A29:20 42 59 54 45 53 20 46 4C
0A31:52 45 45 0D 0D 60 08 00 33
0A39:FF 41 09 00 C3 0F FF 00 19
0A41:41 09 00 87 21 FF 00 41 FA
0A49:09 00 00 00 00 00 00 00 E1
0A51:00 00 00 00 00 00 00 00 65
0A59:00 00 00 00 00 00 00 00 6D
0A61:40 40 40 09 09 09 00 00 AA
0A69:00 A0 01 B1 7A C9 CC 90 06
0A71:0D 20 BA 10 20 73 00 C9 05
0A79:CC D0 14 4C 14 0B C9 99 69
0A81:00 0A AD F6 10 F0 05 A2 96
0A89:05 6C 00 03 4C 11 0B C9 F1
0A91:CD D0 03 4C 4E 0D C9 CE EE
0A99:D0 03 4C 7E 0D C9 CF D0 48
0AA1:03 4C 5F 0D C9 D0 D0 03 3D
0AA9:4C 72 0D C9 D1 D0 03 4C E2
0AB1:D5 0D C9 D3 D0 03 4C EE 84
0AB9:0D C9 D2 D0 03 4C 07 0E 93
0AC1:C9 D4 D0 03 4C 20 0E C9 03
0AC9:D5 D0 03 4C A5 0E C9 D6 F1
0AD1:D0 03 4C 15 0F C9 D7 D0 0A
0AD9:03 4C D5 1C C9 D8 D0 03 55
0AE1:4C 05 0F C9 D9 D0 03 4C 40
0AE9:92 0F C9 DA D0 03 4C 18 35
0AF1:0F C9 DB D0 03 4C 52 0F 85
0AF9:C9 DC D0 03 4C BE 17 C9 C9
0B01:DD D0 03 4C FA 10 C9 DE E9
0B09:D0 03 4C 89 11 4C EB 0F 0B
0B11:6C A0 03 A2 13 A9 00 9D EC
0B19:4D 0A CA D0 FA AD 49 0E ED
0B21:8D 18 D4 20 7C 0B 20 41 32
0B29:0B A9 00 8D 5F 0A 20 59 C4
0B31:0B EE 5F 0A 20 59 0B EE 80
0B39:5F 0A 20 59 0B 4C C9 0C 44
0B41:AD 8F 0F 12 AE 90 0F 7E
0B49:AC 91 0F BD 56 0A 99 56 3C
0B51:0A BD 53 0A 99 53 0A 60 75
0B59:AE 5F 0A BD 56 0A F0 14 8C
0B61:C9 FF F0 10 8D 5D 0A BD 2F
```

Quality Hardware From SCI

THE FSD-2 EXCELERATOR + PLUS

- 100% compatible for the 64 or 64C
- Faster, quieter, more reliable than the 1541 or 1541C
- Breakthrough direct drive technology
- Full one year warranty
- Half height drive, smaller and slimmer than the 1541
- Separate power supply, drive remains cool
- Priced at \$159



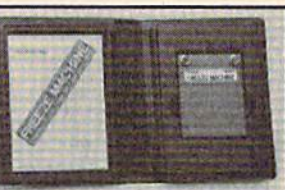
SLIMLINE 64

- Sleek new replacement case for the 64
- Takes only 10 minutes with a phillips to install
- Gives your 64 a new image
- Priced at \$29



FREEZE MACHINE

- The ultimate archival device
- Totally unstoppable freeze utility
- Built-in file copier
- Two fast loads
- Priced at \$39



MODEMS

- Anchor automation
- 300/1200 switchable
- Priced at \$129

EXCEL 2001

- 100% compatible with 1571
- One year warranty
- Separate power supply
- Reviewed in December issue of Run magazine
- Priced at \$209

AMIGA DRIVE

- 1010 compatible drive
- 3 1/2" external
- 28" cable drive can be placed on either side of the Amiga 500
- Can be daisy chained
- Smaller, slimmer than the 1010
- Priced at \$189

SCI Surfside Components International
P.O. Box 1836 Capitola, CA 95010
In California; 408-462-9494

Policy: VISA, M/C, Money Order, or personal check. Personal checks require 3 weeks to clear. California residents add 6.5% sales tax. Prices reflect 4% cash discount. Add 4% for credit cards. Please call for shipping charges.

1-800-548-9669

0B69:53	0A	8D	5C	0A	20	2E	0C	5C	0E11:0E	8C	41	0E	20	7C	0E	A2	12	10B9:32	78	A9	CE	A0	10	8D	14	A7	
0B71:20	83	0C	60	9D	4D	0A	9D	D3	0E19:06	20	4E	1B	4C	11	0B	A9	22	10C1:03	8C	15	03	AD	4C	0E	8D	91	
0B79:50	0A	60	A9	00	8D	5D	0A	DB	0E21:10	20	81	10	8D	42	0E	8E	9E	10C9:B9	10	58	60	0A	CE	B9	10	EA	
0B81:8D	5C	0A	8D	5E	0A	20	73	5E	0E29:43	0E	8C	44	0E	20	7C	0E	38	10D1:D0	0F	AD	48	0E	8D	B9	10	82	
0B89:00	C9	2C	D0	0B	EE	5F	0A	81	0E31:A2	09	20	4E	1B	4C	11	0B	01	10D9:CE	60	0A	EE	29	D0	EE	2A	3E	
0B91:AD	5F	0A	C9	03	D0	E4	60	B9	0E39:00	00	00	09	09	09	00	00	52	10E1:D0	4C	31	EA	00	00	00	00	52	
0B99:C9	58	D0	11	A9	FF	AE	5F	DF	0E41:00	00	00	00	01	01	01	04	6F	10E9:00	00	00	00	00	00	00	00	0A	
0BA1:0A	9D	56	0A	9D	53	0A	9D	7B	0E49:0F	00	A2	00	20	6E	0E	8D	A5	10F1:00	00	00	00	00	00	00	00	C7	
0BA9:59	0A	4C	7C	0A	38	9E	41	8E	0E51:05	D4	8D	64	0A	8E	20	6E	BF	10F9:0F	A2	00	20	73	00	F0	18	E1	
0BB1:C9	08	B0	20	AA	BD	C5	0B	A9	0E59:0E	8D	0C	D4	8D	65	0A	8E	AD	1101:C9	22	D0	14	20	73	00	F0	AB	
0BB9:8D	5D	0A	BD	CE	0B	8D	5E	27	0E61:20	6E	0E	8D	13	D4	8D	66	31	1109:0F	C9	22	F0	0B	9D	E5	10	23	
0BC1:0A	4C	DA	0B	0B	0D	02	04	90	0E69:0A	20	EF	11	60	20	48	14	C9	1111:E8	E0	10	F0	03	4C	05	11	55	
0BC9:06	07	09	00	00	05	06	00	E5	0E71:BD	39	0E	0A	0A	0A	1D	C6		1119:E0	00	F0	DA	A9	2C	9D	E5	96	
0BD1:01	02	03	04	A2	12	6C	00	BF	0E79:3C	0E	60	A2	06	20	6E	0E	09	1121:10	A9	50	E8	9D	E5	10	A9	9C	
0BD9:03	20	73	00	B0	F6	38	E9	A3	0E81:8D	06	D4	8D	67	0A	E8	20	AE	1129:2C	E8	9D	E5	10	A9	57	E8	6C	
0BE1:30	8D	5C	0A	A0	01	B1	7A	86	0E89:6E	0E	8D	0D	D4	8D	68	0A	9A	1131:9D	E5	10	E8	8E	F5	10	A9	42	
0BE9:C9	2C	F0	29	C9	23	D0	09	26	0E91:8E	20	6E	0E	8D	14	D4	8D	CC	1139:01	ED	F6	10	A9	02	A2	08	C1	
0BF1:20	73	00	EE	5D	0A	4C	16	A5	0E99:69	0A	20	EF	11	60	00	01	FA	1141:A0	02	20	BA	FF	AD	F5	10	96	
0BF9:0C	C9	5C	D0	09	20	73	00	D0	0EA1:00	01	00	01	A9	0F	20	81	59	1149:A2	E5	A0	10	20	BD	FF	20	63	
0C01:CE	5D	0A	4C	16	0C	C9	4E	A0	0EA9:10	8D	45	0E	8D	03	D4	8E	6B	1151:C0	FF	A2	02	20	C9	FF	A9	1A	
0C09:D0	CA	AD	5D	0A	09	80	8D	CA	0EB1:46	0E	8E	0A	D4	8C	47	0E	5C	1159:00	20	D2	FF	A9	7D	20	D2	34	
0C11:5D	0A	20	73	00	AE	5F	0A	19	0EB9:8C	11	D4	A9	80	8D	02	D4	A8	1161:FF	20	6E	11	20	EF	11	20	6D	
0C19:AD	5D	0A	9D	56	0A	AD	5C	0D	0EC1:8D	09	D4	8D	10	D4	20	3D	AB	1169:3D	12	4C	11	0B	A9	1E	A0	25	
0C21:0A	9D	53	0A	AD	5E	0A	9D	49	0EC9:12	A2	0C	20	56	14	A2	0D	70	1171:00	85	5B	84	5A	A0	00	B1	AF	
0C29:59	0A	4C	7C	0B	AD	5D	0A	95	0ED1:20	56	14	A2	0E	20	56	14	F1	1179:5A	20	D2	FF	C8	D0	F8	E6	8D	
0C31:18	0A	90	07	4A	8D	5D	0A	A7	0ED9:A2	0C	20	4E	1B	4C	11	0B	6A	1181:5B	A5	5B	C9	20	D0	F0	E6	49	
0C39:4C	51	0C	AE	5D	0A	D0	03	EF	0EE1:AD	45	0E	8D	03	D4	AD	46	CD	1189:A9	01	20	D2	FF	20	D2	FF	18	
0C41:4C	51	0C	AE	5D	0A	BD	F4	C3	0EE9:0E	8D	0A	D4	AD	48	0E	8D	37	1191:20	D2	FF	20	D2	FF	A9	02	66	
0C49:0E	18	6D	5D	0A	8D	5D	0A	3D	0EF1:11	D4	60	00	00	00	00	00	D7	1199:20	C3	FF	20	CC	FF	A9	00	78	
0C51:AD	02	0F	F0	16	AD	5D	0A	DD	0EF9:00	00	00	00	00	00	00	00	16	11A1:8D	F6	10	4C	11	0B	78	AD	62	
0C59:18	6D	02	F0	C9	0D	00	08	B5	0F01:00	00	00	00	00	20	1F	10	C9	11A9:53	0A	20	E4	11	0A	0A	0A	19	
0C61:E9	0C	AE	5F	0A	FE	53	0A	3A	0F09:0C	90	03	4C	DC	0F	8D	02	B6	11B1:0A	0D	56	0A	0A	20	D2	FF	FD	
0C69:8D	5D	0A	AE	5D	0A	AC	5F	97	0F11:0F	4C	11	0B	4C	11	0B	20	79	11B9:AD	54	0A	20	E4	11	0A	0A	94	
0C71:0A	BD	A9	0C	99	50	0A	BD	D3	0F19:1F	10	F0	14	C9	04	B0	2E	18	11C1:0A	0A	0D	57	0A	0A	20	D2	0E	
0C79:B9	0C	99	4D	0A	8A	99	56	7D	0F21:AA	CA	A9	02	1D	61	0A	9D	BC	11C9:FF	AD	55	0A	20	E4	11	0A	63	
0C81:0A	60	AE	5F	0A	BD	53	0A	7A	0F29:61	0A	20	17	15	4C	11	0B	F6	11D1:0A	0A	0A	0D	58	0A	0A	20	AC	
0C89:18	7D	4B	0D	9D	53	0A	A9	3F	0F31:AD	61	0A	29	FD	8D	61	0A	45	11D9:D2	FF	AD	60	0A	20	D2	FF	97	
0C91:07	38	FD	53	0A	90	0E	A8	87	0F39:AD	62	0A	29	FD	8D	62	0A	8F	11E1:58	60	00	8D	E3	11	38	A9	9E	
0C99:F0	0A	18	5E	50	0A	7E	4D	8A	0F41:AD	63	0A	29	FD	8D	63	0A	D9	11E9:07	ED	E3	11	18	60	AD	F6	2D	
0CA1:0A	88	D0	F6	60	4C	DC	0F	67	0F49:20	17	15	4C	11	0B	4C	EB	DD	11F1:10	D0	01	60	A9	03	20	D2	E2	
0CA9:00	77	7E	86	8E	96	9F	A8	8E	0F51:0F	20	1F	10	F0	14	C9	04	53	11F9:FF	AD	48	0E	20	D2	FF	AD	6B	
0CB1:B3	BD	C8	D4	E1	EE	FD	FF	40	0F59:B0	2E	AA	CA	A9	04	1D	61	56	1201:49	00	20	D2	FF	AD	64	0A	08	
0CB9:00	7C	97	1E	18	8B	7E	FA	AC	0F61:0A	9D	61	0A	20	17	15	4C	8C	1209:20	D2	FF	AD	65	0A	20	D2	33	
0CC1:06	AC	F3	E6	8F	F8	2E	FF	B1	0F69:11	0B	AD	61	0A	29	FB	8D	19	1211:FF	AD	66	0A	20	D2	FF	AD	08	
0CC9:AE	50	0A	F0	1D	AD	61	0A	0A	0F71:61	0A	AD	62	0A	29	FB	8D	19	1219:67	0A	20	D2	FF	AD	68	0A	36	
0CD1:F0	18	0D	04	D4	E8	F0	12	98	0F79:62	0A	AD	63	0A	29	FB	8D	B1	1221:20	D2	FF	AD	69	0A	20	D2	6B	
0CD9:CA	8E	01	D4	AD	4D	0A	8D	AC	0F81:63	0A	20	17	15	4C	11	0B	50	1229:FF	AD	61	0A	20	D2	FF	AD	7F	
0CE1:00	D4	AD	61	0A	09	01	8D	FE	0F89:4C	E1	0F	4C	EB	0F	00	00	58	1231:62	0A	20	D2	FF	AD	63	0A	C1	
0CE9:04	D4	AE	51	0A	F0	1D	AD	20	0F91:00	20	1F	10	F0	25	C9	04	58	1239:20	D2	FF	AD	60	AD	F6	10	D0	62
0CF1:62	0A	F0	18	BD	0B	D4	E8	88	0F99:B0	1E	8D	90	0F	CE	90	0F	36	1241:01	60	A9	05	20	D2	FF	AD	7D	
0CF9:F0	12	CA	8E	08	D4	AD	4E	8E	0FA1:20	73	00	20	1F	10	C9	04	7F	1249:45	0E	20	D2	FF	AD	46	0E	16	
0D01:0A	8D	07	D4	AD	62	0A	09	C5	0FA9:B0	0E	8D	91	0F	0E	91	0F	54	1251:20	D2	FF	AD	47	0E	20	D2	9A	
0D09:01	8D	0B	D4	EA	AE	52	0A	76	0FB1:A9	0F	8D	8F	0F	4C	11	0B	26	1259:FF	A9	80	20	D2	FF	AD	20	A3	
0D11:F0	1D	AD	63	0A	F0	18	8D	A8	0FB9:4C	E6	0F	A9	00	8D	8F	0F	98	1261:FF	20	D2	FF	AD	60	60	20	0E	BA
0D19:12	D4	EB	F0	12	CA	8E	0F	85	0FC1:8D	90	0F	8D	91	0F	4C	11	F7	1269:16	20	82	12	AD	48	0E	F0	AD	
0D21:D4	AD	4F	0A	8D	0E	D4	AD	97	0FC9:0B	4C	EB	0F	4C	EB	0F	4C	6B	1271:05	AD	60	0A	D0	F3	60	00	47	
0D29:63	0A	09	01	8D	12	D4	EA	F1	0FD1:EB	0F	4C	EB	0F	4C	EB	0F	82	1279:00	03	06	09	0C	F0	10	11	7D	
0D31:20	1F	10	8D	60	0A	AD	F6	7B	0FD9:4C	EB	0F	A2	0B	6C	00	03	32	1281:00	20	E4	FF	D0	01	60	A8	3E	
0D39:10	F0	03	20	A7	11	20	67	23	0FE1:A2	00	6C	00	03	A2	1A	6C	A5	1289:20	37	13	C0	87	D0	10	BD	57	
0D41:12	4C	11	0B	A2	0E	6C	00	70	0FE9:00	03	A2	11	6C	00	03	4C	E3	1291:39	0E	C9	0F	F0	29	FE	39	63	
0D49:03	EA	00	00	00	A9	07	20	74	0FF1:11	0B	00	A9	00	8D	F3	0F	23	1299:0E	20	FA	1A	4C	B1	12	C0	DB	
0D51:81	10	8D	4B	0D	8E	4C	0D	DE	0FF9:20	73	00	90	0C	C9	AB												

1361:8D 04 D0 BD 47 13 8D 05 EB	1609:8D 0D 16 60 08 AD 56 0A B5	18B1:03 E0 06 D0 03 AD B0 18 B1
1369:D0 AE 81 12 AD 5A 13 8D 7F	1611:8D 2E 17 AD 53 0A 8D 2F 5A	18B9:E0 1A D0 03 AD B0 18 60 EB
1371:06 D0 BD 57 13 8D 07 D0 A9	1619:17 20 30 17 AD 57 0A 8D BC	18C1:C8 2D 41 54 54 26 50 55 40
1379:60 A9 C0 8D 15 D0 A9 20 F3	1621:2E 17 AD 54 0A 8D 2F 17 21	18C9:4C 53 45 00 C8 32 44 45 7A
1381:8D FA 07 A9 21 8D FB 07 E6	1629:20 3B 17 AD 58 0A 8D 2E 26	18D1:43 00 18 32 54 45 40 50 6C
1389:A9 0C 8D 1D D0 A2 00 BD D9	1631:17 AD 55 0A 8D 2F 17 20 17	18D9:4F 00 C8 37 53 55 53 00 D4
1391:A1 13 9D 00 08 E8 E0 80 27	1639:3B 17 20 00 17 20 42 16 A0	18E1:98 34 56 4F 4C 00 C8 3C 5B
1399:D0 F5 20 02 15 60 64 64 21	1641:60 A2 08 A0 00 BD A0 22 AB	18E9:52 45 4C 00 18 37 4B 45 97
13A1:00 00 00 00 00 00 00 00 C7	1649:99 A0 22 BD E0 23 99 E0 32	18F1:59 00 C0 3A 56 4F 49 43 50
13A9:00 FF FF FF FF FF FF C0 90	1651:23 BD 20 25 99 20 25 BD 2A	18F9:45 20 31 00 00 3C 56 4F E7
13B1:00 03 C0 00 03 C0 00 03 CE	1659:60 26 99 60 26 BD A0 27 09	1901:49 43 45 20 32 00 40 3D A2
13B9:C0 00 03 C0 00 03 C0 00 3A	1661:99 A0 27 BD E0 28 99 E0 FE	1909:56 4F 49 43 45 20 33 00 A8
13C1:03 C0 00 03 C0 00 03 C0 96	1669:28 BD 20 2A 99 20 2A BD 1F	1911:C0 39 57 41 56 45 20 53 4C
13C9:00 03 C0 00 03 C0 00 03 E6	1671:60 2B 99 60 2B E8 C8 C0 21	1919:59 4E 43 20 52 49 4E 47 91
13D1:C0 00 03 FF FF FF FF FF B8	1679:F0 F0 03 4C 46 16 60 00 CA	1921:00 00 21 53 4F 55 4E 44 89
13D9:FF 00 00 00 00 00 00 FF	1681:00 00 00 00 00 00 00 AD	1929:20 45 44 49 54 4F 52 00 5E
13E1:FF 00 00 81 00 00 81 00 23	1689:00 00 00 00 00 00 FF B5	1931:00 78 A5 01 29 FB 85 01 8B
13E9:00 81 00 00 81 00 00 81 FD	1691:00 00 00 FF 00 00 00 FF BD	1939:A9 22 A0 19 85 FB 84 FC 90
13F1:00 00 81 00 00 81 00 00 4E	1699:00 00 00 FF 00 00 00 FF C5	1941:20 C5 19 A9 C1 A0 18 85 F8
13F9:81 00 00 81 00 00 FF 00 F8	16A1:00 00 00 00 00 00 FF CD	1949:FB 84 FC 20 C5 19 A9 CD EF
1401:00 00 00 00 00 00 00 00 29	16A9:00 00 00 FF 00 00 00 FF D5	1951:A0 18 85 FB 84 FC 20 C5 68
1409:00 00 00 00 00 00 00 00 31	16B1:00 00 00 FF 00 00 00 FF DD	1959:19 A9 DB A0 18 85 FB 84 5B
1411:00 00 00 00 00 00 00 00 39	16B9:00 00 00 00 00 00 00 E5	1961:FC 20 C5 19 A9 E7 A0 18 AA
1419:00 00 00 00 00 00 00 00 41	16C1:00 00 00 00 00 00 00 ED	1969:85 FB 84 FC 20 C5 19 A9 B1
1421:00 00 00 00 00 2D 2D 2F 87	16C9:00 00 00 00 00 00 FF F5	1971:F3 A0 18 85 FB 84 FC 20 2D
1429:32 32 34 37 37 39 3C 3C 44	16D1:00 00 00 FF 00 00 00 FF FD	1979:C5 19 A9 FD A0 18 85 FB 56
1431:3E 2E 2E 2F 32 34 F0 F4 F5	16D9:00 00 00 FF 00 00 00 FF 06	1981:84 FC 20 C5 19 A9 07 A0 B3
1439:3F F0 F4 30 F0 F4 30 F0 04	16E1:00 00 00 00 00 00 00 FF 0E	1989:19 85 FB 84 FC 20 C5 19 7E
1441:F4 30 90 94 D0 52 D2 8A 4B	16E9:00 00 00 FF 00 00 00 FF 16	1991:A9 11 A0 19 85 FB 84 FC A4
1449:48 20 56 14 E8 E8 E8 20 86	16F1:00 00 00 FF 00 00 00 FF 1E	1999:20 C5 19 A9 ED A0 18 85 B2
1451:56 14 68 AA 60 A0 00 8C 73	16F9:00 00 00 00 00 00 00 A9 CF	19A1:FB 84 FC 20 C5 19 A9 E1 C0
1459:20 14 8C 21 14 8C 22 14 65	1701:23 A0 88 85 5B 84 5A A0 94	19A9:A0 18 85 FB 84 FC 20 C5 5C
1461:8C 23 14 8C 24 14 8C 25 93	1709:00 A2 C0 BD C0 16 91 5A 97	19B1:19 A9 D3 A0 18 85 FB 84 B2
1469:14 20 BB 14 BD 39 0E F0 3C	1711:E8 C8 C0 BD D0 F5 A0 00 1E	19B9:FC 20 C5 19 A5 01 09 04 04
1471:48 A8 A9 C0 8D 20 14 88 C6	1719:E6 5B 18 A5 5A 69 40 90 78	19C1:85 01 58 60 A0 00 B1 FB 6C
1479:F0 3C 38 6E 20 14 6E 21 66	1721:02 E6 5B 85 5A E0 40 F0 95	19C9:85 5A C8 B1 FB 85 5B C8 FE
1481:14 6E 22 14 6E 23 14 6E 6B	1729:03 4C 0C 17 60 00 00 A2 84	19D1:B1 FB F0 06 20 CD 19 4C 4D
1489:24 14 6E 25 14 38 6E 20 67	1731:3F BD 08 16 9D C0 16 CA C6	19D9:D1 19 60 8C 31 19 A2 D0 14
1491:14 6E 21 14 6E 22 14 6E 57	1739:D0 F7 AE 2E 17 E8 BD A4 03	19E1:8E 12 1A C9 40 B0 05 A2 31
1499:23 14 6E 24 14 6E 25 14 21	1741:17 C9 10 B0 54 8D BD 17 E5	19E9:D1 8E 12 1A C9 26 D0 0E 23
14A1:38 6E 20 14 6E 21 14 6E 55	1749:AE 2F 17 BD BA 17 C9 40 2F	19F1:18 A9 70 65 5A 90 02 E6 FE
14A9:22 14 6E 23 14 6E 24 14 9E	1751:B0 47 18 6D BD 17 8D BD A6	19F9:5B 85 5A 4C 1C 1A C9 5C 84
14B1:6E 25 14 4C 78 14 20 BB B1	1759:17 A9 40 18 ED BD 17 AA 46	1A01:D0 07 A9 D8 8D 12 1A A9 B4
14B9:14 60 BD 26 14 85 5B BD 49	1761:8E 00 C0 E0 38 B0 32 A9 8F	1A09:02 0A 0A 0A AA A0 00 BD 38
14C1:37 14 85 5A A0 00 AD 20 61	1769:FF E0 23 D0 03 8D E4 16 6F	1A11:00 D0 91 5A E8 C8 C0 08 45
14C9:14 91 5A C8 91 5A A0 08 77	1771:E0 0C B0 11 8D CC 16 E0 E6	1A19:D0 F5 18 A9 08 65 5A 90 EB
14D1:AD 21 14 91 5A C8 91 5A 28	1779:08 B0 0A 8D C8 16 E0 04 56	1A21:02 E6 5B 85 5A AC 31 19 D4
14D9:A0 10 AD 22 14 91 5A C8 92	1781:B0 03 8D CA 16 A0 00 B9 B3	1A29:C8 60 9D 05 3C 06 DD 06 A1
14E1:91 5A A0 18 AD 23 14 91 B2	1789:9B 17 1D C0 16 9D C0 16 B9	1A31:7D 07 B1 05 51 06 A1 06 58
14E9:5A C8 91 5A A0 20 AD 24 4E	1791:C0 08 F0 05 E8 C8 4C 88 1C	1A39:19 07 00 28 50 20 3A 18 CD
14F1:14 91 5A C8 91 5A A0 28 BF	1799:17 60 F0 1F 1F 01 01 77	1A41:AD 78 12 C9 07 D0 01 60 27
14F9:AD 25 14 91 5A C8 91 5A 51	17A1:01 01 01 10 10 10 00 00 72	1A49:0A AA BD 2B 1A 85 5A BD F0
1501:60 AD A0 20 56 14 E8 E0 BB	17A9:02 02 04 06 06 08 08 0A A4	1A51:2C 1A 85 5B AD 78 12 A0 9C
1509:12 D0 F8 A9 00 8D 81 12 75	17B1:0A 0C 0C 04 00 0E 1C 2A 08	1A59:00 C9 05 B0 07 AC 81 12 AB
1511:8D 78 12 20 5B 13 AD 81 68	17B9:38 40 40 40 00 A9 00 8D 54	1A61:B9 3B 1A A8 AD B1 18 91 05
1519:12 48 A9 00 8D 81 12 20 4A	17C1:60 0A AD 18 D0 8D 18 D0 97	1A69:5A C8 91 5A 60 48 37 43 AA
1521:96 15 EE 81 12 20 96 15 25	17C9:29 F0 09 08 8D 18 D0 AD 86	1A71:47 44 41 45 42 46 43 46 CE
1529:EE 81 12 20 96 15 68 8D D6	17D1:11 D0 09 20 29 EF 8D 11 15	1A79:42 45 41 44 47 43 43 43 9D
1531:81 12 20 5B 13 60 66 76 B7	17D9:D0 A0 75 A2 00 A9 0C 9D CD	1A81:43 20 20 20 20 20 20 23 4A
1539:7E 7E 6E 66 66 00 FD FD A3	17E1:00 04 9D C8 04 A9 76 9D A2	1A89:23 20 5C 5C 5C 5C 5C 12
1541:CC CC CC CC CF CF 07 36	17E9:90 05 9D 58 06 9D 20 07 C8	1A91:20 20 20 20 20 20 7C 12 C9 21
1549:0F 1B 33 63 C3 00 10 38 D4	17F1:E8 E0 C8 D0 E8 20 3A 18 47	1A99:07 F0 01 60 78 A5 01 29 39
1551:28 6C 44 C6 82 00 00 00 B3	17F9:A9 20 A0 00 85 5B 84 5A 16	1AA1:FB 85 01 AD 6E 1A 85 5A 71
1559:00 00 00 00 00 00 00 3C BF	1801:A9 00 A0 00 91 5A C8 D0 72	1AA9:AD 6F 1A 85 5B AE 4A 0E 64
1561:66 66 66 66 66 3C 00 66 16	1809:FB E6 5B A9 40 C5 5B F0 B7	1AB1:BD 70 1A 20 DC 19 AE 4A 19
1569:76 7E 7E 6E 66 66 00 00 F1	1811:05 A9 00 4C 05 18 20 7A 36	1AB9:0E BD 82 1A 20 DC 19 A5 A2
1571:00 00 00 00 00 00 00 3C D7	1819:13 20 32 19 A2 00 A0 00 09	1AC1:01 09 04 85 01 58 20 1C 57
1579:66 66 66 66 66 3C 00 7E 46	1821:18 20 F0 FF 20 EE 1A 20 94	1AC9:1D 60 00 E8 28 68 E8 28 10
1581:60 60 78 60 60 60 00 7E 0C	1829:3E 1A 20 9D 1A AD 11 D0 57	1AD1:68 E8 28 68 E8 28 68 88 41
1589:60 60 78 60 60 60 00 3B D0	1831:09 10 8D 11 D0 4C 11 0B 91	1AD9:C8 08 88 08 2C 2E 2F 31 AF
1591:3C 3D 08 48 88 AE 81 12 C2	1839:00 A2 00 A9 03 A0 09 8C E5	1AE1:33 34 36 38 39 3B 3D 3E 76
1599:BD 90 15 85 5B BD 93 15 CF	1841:39 18 20 91 18 A2 14 A9 4E	1AE9:2D 2E 30 32 35 EA A2 00 04
15A1:85 5A BD 61 0A 48 A0 28 CD	1849:03 A0 1D 8C 39 18 20 91 8B	1AF1:20 FA 1A E8 E0 11 D0 FB AC
15A9:A2 28 29 02 D0 02 A2 40 88	1851:18 A2 00 A9 03 9D AE 06 C2	1AF9:60 E8 CB 1A BD CC 1A 85 F7
15B1:A9 18 8D 0D 16 20 FB 15 77	1859:9D D6 06 9D FE 06 9D 26 1A	1B01:5A BD DD 1A 85 5B 78 A5 61
15B9:A0 50 A2 28 68 48 29 04 D9	1861:07 9D 4E 07 9D 76 07 9D 29	1B09:01 29 FB 85 01 A9 D1 8D C1
15C1:D0 02 A2 40 A9 18 8D 0D 03	1869:9E 07 9D C6 07 20 B2 18 01	1B11:12 1A AE CB 1A BD 39 0E B1
15C9:16 20 FB 15 68 29 F0 C9 6B	1871:E8 E0 09 D0 E0 A2 0D A9 D1	1B19:C9 0A B0 13 A9 00 20 FF 8B
15D1:80 D0 05 A2 00 4C F9 15 75	1879:02 9D B0 07 9D 60 07 9D B2	1B21:19 AE CB 1A BD 39 0E 09 A2
15D9:C9 40 D0 05 A2 08 4C F9 2B	1881:88 07 CA 10 F4 A2 0C A9 06	1B29:30 20 FF 19 4C 43 1B A9 60
15E1:15 C9 20 D0 05 A2 10 4C 39	1889:7C 9D 36 04 CA 10 FA 60 53	1B31:31 20 FF 19 38 AE CB 1A C7
15E9:F9 15 C9 10 D0 05 A2 18 88	1891:9D 96 05 9D BE 05 9D E6 DC	1B39:BD 39 0E E9 0A 09 30 20 F1
15F1:4C F9 15 A2 20 4C F9 15 C8	1899:05 9D 0E 06 9D 36 06 9D 45	1B41:FF 19 A5 01 09 04 85 01 E6
15F9:A0 00 BD 37 15 91 5A E8 2C	18A1:5E 06 9D 86 06 20 B2 18 CC	1B49:58 AE CB 1A 60 20 FA 1A 06
1601:C8 CE 0D 16 D0 F4 A9 08 FD	18A9:E8 EC 39 18 D0 E2 60 C3 C8	1B51:E8 20 FA 1A E8 20 FA 1A DC


```

1B59:60 A6 7A A0 04 84 0F BD D0
1B61:00 02 10 07 C9 FF F0 3E F8
1B69:E8 D0 F4 C9 20 F0 37 85 3C
1B71:08 C9 22 F0 55 24 0F 70 3B
1B79:2D C9 3F D0 04 A9 99 D0 78
1B81:25 C9 30 90 04 C9 3C 90 1C
1B89:1D 84 71 A0 00 84 0B 88 58
1B91:86 7A CA C8 E8 BD 00 02 CF
1B99:38 F9 9E A0 F0 F5 C9 80 BB
1BA1:D0 2F 05 0B A4 71 E8 C8 E2
1BA9:99 FB 01 C9 00 F0 38 38 D4
1BB1:E9 3A F0 04 C9 49 D0 02 E0
1BB9:85 0F 38 E9 55 D0 A0 85 D0
1BC1:08 BD 00 02 F0 E0 C5 08 2A
1BC9:F0 DC C8 99 FB 01 E8 D0 E8
1BD1:F0 A6 7A E6 0B C8 B9 9D 74
1BD9:A0 10 FA B9 9E A0 D0 B5 2E
1BE1:F0 0F BD 00 02 10 BD 99 71
1BE9:FD 01 C6 7B A9 FF 85 7A C2
1BF1:60 A0 00 B9 1D 1C D0 02 19
1BF9:C8 E8 BD 00 02 38 F9 1D 88
1C01:1C F0 F5 C9 80 D0 04 05 33
1C09:0B D0 99 A6 7A E6 0B C8 E6
1C11:B9 1C 1C 10 FA B9 1D 1C C6
1C19:D0 E0 F0 C6 4D 55 D3 4F 33
1C21:43 54 41 56 C5 56 4F 49 0D
1C29:43 C5 56 4F CC 53 50 45 CD
1C31:45 C4 41 54 D4 53 55 D3 1D
1C39:44 45 C3 52 45 CC 50 55 D5
1C41:4C 53 C5 46 49 4C 54 45 FA
1C49:D2 4B 45 49 53 48 49 46 98
1C51:D4 46 4F 4C 4C 4F D7 53 D6
1C59:59 4E C3 52 49 4E C7 53 D5
1C61:43 52 45 45 CE 57 52 49 8E
1C69:54 C5 48 49 4C CC 00 10 E0
1C71:0F 24 0F 30 0B C9 FF F0 8F
1C79:07 C9 CC B0 06 4C 2A 47 9D
1C81:4C F3 A6 38 E9 CB AA 84 8D
1C89:49 A0 FF CA F0 08 C8 B9 2E
1C91:1D 1C 10 FA 30 F5 C8 B9 B5
1C99:1D 1C 30 05 20 47 AB D0 04
1CA1:F5 4C EF A6 00 00 00 03 53
1CA9:05 00 02 04 08 01 00 0B 34
1CB1:09 0E 0C 0A 04 0D 00 09 71
1CB9:00 07 0A 08 06 0B 00 08 D9
1CC1:48 4C 6C 6E 7E 7F 81 91 2C
1CC9:93 B3 B7 F7 FF 00 00 00 2F
1CD1:00 4C DC F0 20 73 00 C9 42
1CD9:41 90 F6 C9 48 B0 F2 29 66
1CE1:07 8D 4A 0E A0 01 B1 7A 12
1CE9:C9 5C D0 0E AD 4A 0E 09 D4
1CF1:08 8D 4A 0E 20 73 00 4C D6
1CF9:0A 1D C9 23 D0 0B AD 4A 42
1D01:0E 09 10 8D 4A 0E 20 73 9D
1D09:00 AE 4A 0E BD A7 1C 8D 6B
1D11:4A 0E 20 1C 1D 20 9D 1A 78
1D19:4C 11 0B AE 4A 0E BD BF CF
1D21:1C 8D A6 1C 8D A5 1C A2 41
1D29:0D A9 00 9D F4 0E CA D0 74
1D31:FA A9 01 A2 0D 18 0E A5 28
1D39:1C 90 02 A9 FF 4E A5 1C 21
1D41:18 4E A5 1C 90 03 9D F4 52
1D49:0E CA CA 18 4E A5 1C 90 E9
1D51:03 9D F4 0E CA 18 4E F3
1D59:A5 1C 90 03 9D F4 0E CA 57
1D61:CA 18 4E A5 1C 90 03 9D F1
1D69:F4 0E CA 18 4E A5 1C 90 4E
1D71:03 9D F4 0E CA 18 4E 14
1D79:A5 1C 90 03 9D F4 0E CA 77
1D81:CA 18 4E A5 1C 90 03 9D 12
1D89:F4 0E 60 08 AD 5C 08 20 5D
1D91:B8 1F CE 72 08 20 7E 27 D5
1D99:EE 6F 0E A9 40 2D 74 08 6A
1DA1:F0 13 AD 73 08 F0 0E AD D3
1DA9:4D 08 0D 4E 08 F0 06 20 43
1DB1:20 1C 20 7E 27 EE 72 08 D0
1DB9:A2 56 20 5E 28 CE 72 08 2E
1DC1:4C AD 27 AD 06 09 8D 71 2E
1DC9:08 AD 71 08 D0 14 A9 04 50
1DD1:2D 74 08 F0 0C AD 7F 08 ED
1DD9:29 20 F0 18 AD 74 08 10 AF
1DE1:13 60 AD 74 08 29 10 F0 B0
1DE9:F8 A9 00 8D 18 09 8D 19 FC
1DF1:09 8D 1A 09 AD 04 09 85 FC
1DF9:06 AD 05 09 85 07 AD 78 EF

```

```

1E01:AD 14 03 C9 31 D0 17 A9 BA
1E09:5A A0 7D 8D 14 03 8C 15 FD
1E11:03 A9 7F A0 00 85 FC 84 C7
1E19:FB 20 4A 7D 58 60 A9 31 45
1E21:A0 EA 8D 14 03 8C 15 03 D2
1E29:58 60 18 0E 07 07 20 09 2B
1E31:00 18 0E 07 07 20 09 00 70
1E39:18 0E 07 07 20 09 00 00 7B
1E41:00 00 0F 00 03 0F 20 20 14
1E49:20 A2 00 BD 2B 7D 9D 00 A4
1E51:D4 E8 E0 19 D0 F5 60 04 03
1E59:04 CE 59 7D D0 13 AD 45 C1
1E61:7D 8D 59 7D CE 58 7D D0 66
1E69:08 A9 04 8D 58 7D 20 75 DB
1E71:7D 4C 31 EA A0 00 B1 FB B8
1E79:29 01 F0 04 4C 5B 7E 60 16
1E81:20 2D 7E AD 07 7E F0 1E F5
1E89:AD 47 7D 8D 04 D4 AD 07 CC
1E91:7E C9 FF F0 11 8D 01 D4 24
1E99:AD 08 7E 8D 00 D4 AD 47 4D
1EA1:7D 09 01 8D 04 D4 C8 20 FC
1EA9:2D 7E AD 07 7E F0 1E AD E3
1EB1:48 7D 8D 0B D4 AD 07 7E BD
1EB9:C9 FF F0 11 8D 08 D4 AD ED
1EC1:08 7E 8D 07 D4 AD 48 7D 2F
1EC9:09 01 8D 0B D4 C8 20 2D 64
1ED1:7E AD 07 7E F0 1E AD 49 26
1ED9:7D 8D 12 D4 AD 07 7E C9 18
1EE1:FF F0 11 8D 0F D4 AD 08 84
1EE9:7E 8D 0E D4 AD 49 7D 09 6E
1EF1:01 8D 12 D4 C8 B1 FB 8D 34
1EF9:58 7D 18 A5 FB 69 04 90 3D
1F01:02 E6 FC 85 FB 60 00 00 53
1F09:00 77 7E 86 8E 96 9F A8 14
1F11:B3 BD C8 D4 E1 EE FD FF C5
1F19:FF FF 00 7C 97 1E 18 8B 10
1F21:7E FA 06 AC F3 E6 8F F8 3C
1F29:2E FF FF FF B1 FB 4A 48 D8
1F31:29 0F AA BD 09 7E 8D 07 5D
1F39:7E F0 1D C9 FF F0 19 BD E6
1F41:1B 7E 8D 08 7E 68 4A 4A 53
1F49:4A 4A AA F0 0A 18 4E 07 F7
1F51:7E 6E 08 7E CA D0 F6 60 3B
1F59:68 60 B1 FB C9 01 F0 0B 19
1F61:C9 03 F0 12 C9 05 D0 03 8B
1F69:4C C7 7E A9 7F A0 00 85 2E
1F71:FC 84 FB 4C 75 7D C8 B1 78
1F79:FB 8D 45 7D C8 B1 FB 8D 2C
1F81:46 7D C8 B1 FB 8D 05 D4 6B
1F89:C8 B1 FB 8D 0C D4 C8 B1 E7
1F91:FB 8D 13 D4 C8 B1 FB 8D 73
1F99:06 D4 C8 B1 FB 8D 0D D4 49
1FA1:C8 B1 FB 8D 14 D4 C8 B1 40
1FA9:FB 8D 47 7D C8 B1 FB 8D 9C
1FB1:48 7D C8 B1 FB 8D 49 7D CD
1FB9:A9 0C 18 65 FB 90 02 E6 36
1FC1:FC 85 FB 4C 75 7D C8 B1 09
1FC9:FB 8D 03 D4 C8 B1 FB 8D A9
1FD1:0A D4 C8 B1 FB 8D 11 D4 8B
1FD9:C8 B1 FB 8D 02 D4 C8 B1 E7
1FE1:FB 8D 09 D4 C8 B1 FB 8D 82
1FE9:10 D4 A9 07 18 65 FB 90 E9
1FF1:02 E6 FC 85 FB 4C 75 7D 5C
1FF9:48 4A 4A 4A 20 04 00 B7

```

Program 2: Music Demo—Für Elise

```

MJ 10 REM COPYRIGHT 1988 COMPU
TEI PUB., INC. - ALL RIG
HTS RESERVED
KJ 20 GOSUB 620:REM DELETE THE
[SPACE]NEXT 2 LINES BEFO
RE COMPILING
XB 30 REM SCREEN
KJ 40 REM WRITE"FURELISE.EXE":
REM COMPILES AS "FURELIS
E.EXE"
HG 50 SPEED 8:FOLLOW 0:OCTAVE
[SPACE]0,0,0
CE 60 ATT 2,2,1:SUS0,0,0:DEC10
,10,10:REL4,4,4
AK 70 VOICES,3,3:PULSE8,8,8
MC 80 KEY C
PM 90 FOR J=1 TO 2

```

```

RM 100 FOR I=1 TO 2
EM 110 MUSE5,,,2:MUS,D5#,,,2:MU
SE5,,,2:MUS,D5#,,,2
HD 120 MUSE5,,,2:MUS,B4,,,2:MUS
D5,,,2:MUS,C5,,,2
KC 130 MUSA4,,A2,2
EK 140 MUS,E3,,,2:MUS,,A3,2
XJ 150 MUS,C4,,,2:MUSE4,,,2:MUS
,A4,,,2:MUSB4,,E2,2
KE 160 MUS,E3,,,2:MUS,,G3#,2
GB 170 MUS,E4,,,2:MUSG4#,,,2:MU
S,B4,,,2
GD 180 MUS C5,,,A2,2:MUS,E3,,,2:
MUS,,A3,2
FX 190 MUS ,E4,,,2
PA 200 MUSE5,,,2:MUS,D5#,,,2:MU
SE5,,,2:MUS,D5#,,,2
BK 210 MUSE5,,,2:MUS,B4,,,2:MUS
D5,,,2:MUS,C5,,,2
RE 220 MUSA4,,A2,2:MUS,E3,,,2:M
US,,A3,2
QF 230 MUS,C4,,,2:MUSE4,,,2:MUS
,A4,,,2:MUSB4,,E2,2
QX 240 MUS,E3,,,2:MUS,,G3#,2
DM 250 MUS,E4,,,2:MUSC5,,,2:MUS
,B4,,,2
QG 260 IF I=2 THEN280
QJ 270 MUSA4,,A2,2:MUS,E3,,,2:M
US,,A3,2:MUS,X,X,2:NEXT
KM 280 MUSA4,,A2,2:MUS,E3,,,2:M
US,,A3,2:MUSB4,,E2,2:MUS,
C5,,,2:MUSD5,,,2
QG 290 MUSE5,,,C3,2:MUS,G3,,,2:M
US,,C4,2
RQ 300 MUS,G4,,,2:MUSF5,,,2:MUS
,E5,,,2
DA 310 MUSD5,,,G2,2:MUS,G3,,,2:M
USB3,,,2
AS 320 MUS,F4,,,2:MUSE5,,,2:MUS
,D5,,,2
QJ 330 MUSC5,,,A2,2:MUS,E3,,,2:M
US,,G3,2
HA 340 MUS,E4,,,2:MUSD5,,,2:MUS
,C5,,,2
HK 350 MUSB4,,E2,2:MUS,E3,,,2:M
US,,E4,2
DE 360 MUSE5,,,2:MUS,E5,,,2:MUS
,,E4,2:MUS,E5,,,2:MUSE5,
,,2:MUS,E6,,,2
FA 370 MUS,D5#,2:MUS,E5,,,2:MU
SD5#,,,2:MUS,E5,,,2
AJ 380 MUSD5#,,,2:MUS,,E5,2:
AM 390 :
EJ 400 MUS,D5#,,,2
JC 410 REM
GB 420 FOR I=1 TO 2
AX 430 MUSE5,,,2:MUS,B4,,,2:MUS
D5,,,2:MUS,C5,,,2
BG 440 MUSA4,,A2,2
CR 450 MUS,E3,,,2:MUS,,A3,2
DE 460 MUS,C4,,,2:MUSE4,,,2:MUS
,A4,,,2:MUSB4,,E2,2
BK 470 MUS,E3,,,2:MUS,,G3#,2
EC 480 MUS,E4,,,2:MUSG4#,,,2:MU
S,B4,,,2
AH 490 MUS C5,,,A2,2:MUS,E3,,,2:
MUS,,A3,2
XB 500 MUS ,E4,,,2
SS 510 MUSE5,,,2:MUS,D5#,,,2:MU
SE5,,,2:MUS,D5#,,,2
KM 520 MUSE5,,,2:MUS,B4,,,2:MUS
D5,,,2:MUS,C5,,,2
MJ 530 MUSA4,,A2,2:MUS,E3,,,2:M
US,,A3,2
GB 540 MUS,C4,,,2:MUSE4,,,2:MUS
,A4,,,2:MUSB4,,E2,2
CQ 550 MUS,E3,,,2:MUS,,G3#,2
SG 560 MUS,E4,,,2:MUSC5,,,2:MUS
,B4,,,2
RX 570 IF I=2 THEN590
SQ 580 MUSA4,,A2,2:MUS,E3,,,2:M
US,,A3,2:MUS,X,X,2:NEXT
EQ 590 MUSA4,,A2,8:MUSX,X,X,8
CR 600 OCTAVE1,1,0:NEXT J
HK 610 END:REM KILL:END

```



```

EK 620 POKE53281,6:POKE53280,6
      PRINT"[CLR][CYN]
      {3 SPACES}COPYRIGHT 198
      8 COMPUTE! PUB., INC."
JJ 630 PRINTTAB(11)"ALL RIGHTS
      RESERVED[7 DOWN]"
AH 640 PRINTTAB(14)"FUR ELISE"
      :PRINTTAB(9)"OR THE AUT
      UMN LEAVES"
RR 650 PRINT:PRINT:PRINT:PRINT
      :PRINT:PRINT
CR 660 PRINTTAB(9)"LUDWIG VAN
      {SPACE}BEETHOVEN":RETUR
      N

```

Big Screen

See instructions in article on page 66
before typing in.

```

0801:0B 08 FF FF 9E 32 31 33 EB
0809:34 00 29 08 FF FF 8F 14 0C
0811:14 14 14 14 14 14 14 21
0819:43 4F 50 59 52 49 47 48 CC
0821:54 20 31 39 38 38 20 43 43
0829:4F 4D 50 55 54 45 21 20 AD
0831:50 55 42 4C 49 43 41 54 F9
0839:49 4F 4E 53 20 20 20 20 A2
0841:47 52 45 45 4E 53 42 4F 1A
0849:52 4F 2C 20 4E 2E 43 2E BD
0851:20 20 00 00 00 20 B0 1D 78
0859:20 4C 09 20 75 09 A9 0F E1
0861:8D 21 D0 8D 20 D0 4C A4 F4
0869:09 D0 D2 CF C7 D2 C1 CD 64
0871:A0 C2 D9 A0 D2 CF C2 C5 E8
0879:D2 D4 A0 C2 C9 D8 C2 D9 79
0881:B3 B0 B0 B6 A0 D3 D4 CF E6
0889:CE C5 C3 D5 D4 D4 C5 D2 A0
0891:A0 D4 C5 D2 D2 C1 C3 C5 F7
0899:C7 D2 C5 C5 CE D3 C2 CF 72
08A1:D2 CF AC A0 CE AE C3 AE 16
08A9:A0 B2 B7 B4 B0 B5 A9 20 C8
08B1:85 4C A9 40 85 4E A9 60 E9
08B9:85 50 A9 80 85 52 A9 00 A6
08C1:85 4B 85 4D 85 4F 85 51 B2
08C9:A0 00 A2 00 60 20 AF 08 69
08D1:B1 4B 8D 00 A0 B1 4D 8D 33
08D9:01 A0 B1 4F 91 4B B1 51 2C
08E1:91 4D AD 00 A0 91 4F AD 5B
08E9:01 A0 91 51 C8 C0 D0 D0 04
08F1:DF 20 7F 0B E8 E0 20 D0 76
08F9:D7 60 20 AF 08 B1 4B 8D 38
0901:00 A0 B1 4F 8D 01 A0 B1 C9
0909:4D 91 4B B1 51 91 4F AD C7
0911:00 A0 91 4D AD 01 A0 91 96
0919:51 C8 C0 00 D0 DF 20 7F E3
0921:0B E8 E0 20 D0 D7 60 AD 65
0929:02 DD 09 03 8D 02 DD AD E2
0931:00 DD 29 FC 09 03 8D 00 1F
0939:DD A9 15 8D 18 D0 A9 1B 92
0941:8D 11 D0 A9 00 85 CE 8D 44
0949:15 D0 60 A5 01 29 FE 85 B0
0951:01 AD 02 DD 09 03 8D 02 DE
0959:DD AD 00 DD 29 FC 09 03 F5
0961:8D 00 DD AD 18 D0 09 08 EE
0969:8D 18 D0 AD 11 D0 09 20 3B
0971:8D 11 D0 60 A9 04 85 FC 14
0979:A9 00 85 FB A2 00 A9 01 3A
0981:A0 00 91 FB C8 C0 8D 0E EF
0989:F9 E6 FC E8 E0 04 D0 F2 2C
0991:60 20 AF 08 91 4B C8 C0 5E
0999:00 D0 F9 E6 4C E8 E0 20 75
09A1:D0 F2 60 A5 C5 C9 4D D0 E5
09A9:03 4C 5D 0A C9 39 D0 06 77
09B1:20 AF 1D 4C A4 09 C9 0C 11
09B9:D0 08 A9 01 8D B3 02 4C 07
09C1:0C 16 C9 25 D0 06 20 0C D5
09C9:10 4C A9 C9 22 D0 06 9A
09D1:20 E9 11 4C A4 09 C9 2B 5D
09D9:D0 06 20 05 0F 4C A4 09 26
09E1:C9 24 D0 C0 20 55 18 20 63
09E9:4C 09 20 75 09 4C A4 09 8B
09F1:C9 3F D0 0A AD 8D 02 C9 E4

```

```

09F9:07 D0 03 20 E2 FC C9 02 C6
0A01:D0 06 20 FB 08 4C A4 09 86
0A09:C9 07 D0 06 20 CE 08 4C D6
0A11:A4 09 C9 33 D0 13 AD 8D E1
0A19:02 C9 00 D0 06 20 75 09 52
0A21:4C A4 09 20 92 09 4C A4 9D
0A29:09 C9 31 D0 06 20 9B 0D 5C
0A31:4C A4 09 C9 29 D0 11 AD AE
0A39:8D 02 D0 06 20 BE 1C 4C 8F
0A41:A4 09 20 FF 1A 4C A4 09 42
0A49:C9 0D D0 06 20 24 0F 4C FB
0A51:A4 09 C9 2A D0 06 20 9C 51
0A59:0F 4C A4 09 AD 00 DC 29 7D
0A61:0F C9 0F D0 03 4C A4 09 F9
0A69:C9 0E D0 06 20 94 0A 4C 14
0A71:A4 09 C9 0D D0 06 20 AF B2
0A79:0B 4C A4 09 C9 0B D0 06 6D
0A81:20 62 0C 4C A9 09 C9 07 68
0A89:D0 06 20 17 0D 4C A4 09 E8
0A91:4C A4 09 20 AF 08 20 9D 93
0A99:0A 4C E3 0A B1 4B 99 00 D0
0AA1:A0 B1 4D 99 40 A1 B1 4F F0
0AA9:99 80 A2 B1 51 99 C0 A3 30
0AB1:C8 C0 00 D0 E7 20 7F 0B 31
0AB9:B1 4B 99 00 A1 B1 4D 99 B4
0AC1:40 A2 B1 4F 99 80 A3 B1 91
0AC9:51 99 C0 A4 C8 C0 4D D0 E9
0AD1:E7 A0 00 20 1B 0B B9 4B C7
0AD9:00 99 53 00 C8 C0 08 D0 E8
0AE1:F5 60 20 AF 08 20 EC 0A AC
0AE9:4C FD 0A B1 53 91 4B B1 29
0AF1:55 91 4D B1 57 91 4F B1 2B
0AF9:59 91 51 60 C8 C0 00 F0 89
0B01:06 20 EC 0A 4C FD 0A 20 EE
0B09:7F 0B 20 EC 0A C8 C0 40 A9
0B11:D0 F8 A0 00 20 1B 0B 4C B1
0B19:38 0B B9 4B 00 18 69 40 6D
0B21:99 4B 00 09 09 B9 4C 00 A7
0B29:18 69 01 99 4C 00 C8 C8 1C
0B31:C0 10 D0 E6 A0 00 60 E8 E2
0B39:1E 18 F0 06 20 EC 0A 4C 59
0B41:FD 0A A0 00 20 49 0B 60 89
0B49:B9 00 A0 91 4F B9 40 A1 EC
0B51:91 51 B9 80 A2 91 4B B9 6F
0B59:C0 A3 91 4D C8 C0 00 D0 D9
0B61:E7 20 7F 0B B9 00 A1 91 B6
0B69:4F B9 40 A2 91 51 B9 80 8D
0B71:A3 91 4B B9 C0 A4 91 4D CB
0B79:C8 C0 40 D0 E7 60 E6 4C 14
0B81:E6 4E E6 50 E6 52 E6 54 23
0B89:96 56 E6 58 E6 5A 60 A9 16
0B91:3E 85 4C A9 5E 85 4E A9 9B
0B99:7E 85 50 A9 9E 85 52 A9 4E
0BA1:00 85 4B 85 4D 85 4F 85 7F
0BA9:51 A0 00 A2 00 60 20 90 0D
0BB1:0B B1 4B 99 00 A0 B1 4D EF
0BB9:99 40 A1 B1 4F 99 80 A2 80
0BC1:B1 51 99 C0 A3 C8 C0 00 06
0BC9:D0 E7 20 7F 0B B1 4B 99 8D
0BD1:00 A1 B1 4D 99 40 A2 B1 20
0BD9:4F 99 80 A3 B1 51 99 C0 0F
0BE1:A4 C8 C0 40 D0 E7 A0 00 FF
0BE9:20 1B 0B 20 2A 0C 20 2A 26
0BF1:0C B9 4B 00 99 53 00 C8 C8
0BF9:C0 08 D0 F5 20 90 0B 20 65
0C01:EC 0A 4C 06 0C C8 C0 00 01
0C09:F0 06 20 EC 0A 4C 06 0C 87
0C11:20 7F 0B 20 EC 0A C8 C0 5E
0C19:40 D0 F8 A0 00 20 1B 0B 70
0C21:20 2A 0C 20 2A 0C 4C 50 C1
0C29:0C B9 4B 00 28 E9 40 99 A2
0C31:4B 00 B0 09 B9 4C 00 38 CC
0C39:E9 01 99 4C 00 B9 4C 00 FD
0C41:38 E9 01 99 4C 00 C8 C8 66
0C49:C0 10 D0 D0 A0 00 60 E8 6C
0C51:E0 18 F0 06 20 EC 0A 4C 73
0C59:06 0C 20 AF 08 20 49 0B D4
0C61:60 20 AF 08 B1 4B 99 00 16
0C69:A0 B1 4D 99 10 A0 B1 4F 37
0C71:99 20 A0 B1 51 99 30 A0 7F
0C79:C8 C0 10 D0 E7 A0 00 B9 B0
0C81:4C 00 99 54 00 B9 4B 00 B5
0C89:18 69 10 99 53 00 90 09 68
0C91:B9 4C 00 18 69 01 99 54 F1
0C99:00 C8 C8 C0 08 D0 E0 A0 EE

```

```

0CA1:00 20 EC 0A C8 C0 00 D0 1A
0CA9:F8 20 7F 0B 20 EC 0A C8 78
0CB1:C0 40 D0 F8 A0 00 A9 30 6C
0CB9:85 5B 20 E9 0C B9 00 A0 F5
0CC1:91 4D B9 10 A0 91 4B B9 C9
0CC9:20 A0 91 51 B9 30 A0 91 C2
0CD1:4F C8 C0 10 D0 E7 A0 00 44
0CD9:A9 10 85 5B 20 E9 0C E8 DA
0CE1:E0 19 D0 01 60 4C 65 0C E5
0CE9:B9 4B 00 18 65 5B 99 4B 4A
0CF1:00 90 09 B9 4C 00 18 69 E6
0CF9:01 99 4C 00 C8 C8 C0 08 75
0D01:D0 E6 A0 00 60 C6 4C C6 CE
0D09:4E C6 50 C6 52 C6 54 C6 8F
0D11:56 C6 5F C6 5A 60 20 AF C3
0D19:08 20 7F 0B A0 3F B1 4B 90
0D21:99 D0 9F B1 4D 99 E0 9F 7D
0D29:B1 4F 99 C0 9F B1 51 99 32
0D31:00 A0 88 C0 2F D0 E7 A0 BD
0D39:00 B9 4C 00 99 54 00 B9 23
0D41:4B 00 38 E9 10 99 00 00 34
0D49:00 09 B9 54 00 38 E9 01 30
0D51:99 54 00 C8 C8 C0 08 D0 04
0D59:E0 A0 3F 20 EC 0A 88 C0 57
0D61:FF D0 F8 20 06 D0 20 EC 62
0D69:0A 88 C0 FF D0 F8 A0 0F 7D
0D71:B9 00 A0 91 4D B9 10 A0 A7
0D79:91 4B B9 20 A0 91 51 B9 17
0D81:30 A0 91 4F 88 C0 FF D0 1B
0D89:E7 A0 00 20 7F 0B 20 1B 45
0D91:0B E8 E0 19 F0 03 4C 1A 5F
0D99:0D 60 A9 A0 85 FC A9 20 25
0DA1:85 FE A9 00 85 FB 85 FD 98
0DA9:85 5D 85 5E 85 5F 85 60 89
0DB1:A2 00 A0 00 20 5B D0 4C 87
0DB9:CE 0D B1 FD 91 FB C8 C0 63
0DC1:00 D0 F7 E6 FC E6 FE E8 E7
0DC9:E0 20 D0 EE 60 20 AF 08 50
0DD1:A9 20 85 FE A9 A0 85 FC 41
0DD9:20 DF 0D 4C B2 0E A9 80 04
0DE1:85 5B 85 5C A2 00 A0 00 62
0DE9:84 FB 84 5D 84 5E 84 60 B2
0DF1:A9 00 91 FD B1 FB 25 5B 16
0DF9:C5 5B D0 06 B1 FD 05 5C 34
0E01:91 FD A5 5B 18 4A 4A 90 DE
0E09:02 A9 80 85 5B A5 5C 18 3B
0E11:4A 90 02 A9 80 85 5C E8 0D
0E19:E0 04 D0 D8 A2 00 A5 FB AA
0E21:18 69 08 85 FB 90 02 E6 0A
0E29:FC E6 5D A5 5D C9 02 D0 6A
0E31:C3 A9 00 85 5D A5 02 D0 87
0E39:69 08 85 FD 90 02 E6 FE F5
0E41:E6 5E A5 5E C9 14 D0 A8 EB
0E49:A9 00 85 5E C6 5F A5 5F 30
0E51:C9 08 F0 2B C9 4D D0 03 28
0E59:20 A6 0E A5 FD 38 E9 9F 8F
0E61:85 FD B0 02 C6 FE A5 5F D2
0E69:C9 04 D0 03 4C F1 0D A5 9F
0E71:FB 38 E9 3E 85 FB B0 02 3A
0E79:C6 FC C6 FC 4C F1 0D A9 CE
0E81:00 85 5F A5 FD 18 69 99 02
0E89:85 FD 90 02 E6 FE A5 5F 94
0E91:38 E9 06 85 FB B0 02 C6 CA
0E99:FC E6 60 A5 00 C9 0D D0 69
0EA1:01 60 4C F1 0D A5 0B 38 2E
0EA9:E9 06 85 FB B0 02 C6 FC C4
0EB1:60 A9 2F 85 FE A9 04 85 D2
0EB9:FD 85 5F A9 60 85 FC 20 EF
0EC1:DF 0D A9 20 85 FE A9 A0 64
0EC9:85 FD A9 40 85 FC A9 00 D4
0ED1:85 5F 20 DF 0D A9 2F 85 7D
0ED9:FE A9 A4 85 FD A9 80 85 E9
0EE1:FC A9 04 85 5F 20 DF 0D 08
0EE9:A5 C5 C9 40 F0 FA A9 00 4E
0EF1:85 FB 85 FD A9 20 85 FC 36
0EF9:A9 A0 85 FE A0 00 A2 00 FD
0F01:20 BB D0 60 A9 20 85 FC 9B
0F09:A9 00 85 FB A0 00 A9 FF C4
0F11:38 F1 FB 91 FB C8 C0 00 E4
0F19:D0 F4 E6 FC A5 FC C9 A0 DE
0F21:D0 EC 60 20 28 09 4C 46 35
0F29:0F 93 0E 4E 41 4D 45 20 44
0F31:4F 46 20 47 52 41 50 48 81
0F39:49 43 20 54 4F 20 53 41 F8
0F41:56 45 3A 20 00 A2 00 86 36

```


0F49:C6	BD	2A	0F	F0	07	20	D2	27	11F1:C9	B4	B0	18	AD	5D	03	C9	70	1499:D0	03	E8	B9	48	21	9D	D0	76	
0F51:FF	E8	4C	4A	0F	A0	00	20	F2	11F9:11	90	11	AD	5B	03	C9	11	51	14A1:03	E8	C8	C0	08	D0	ED	A0	AA	
0F59:CF	FF	99	EB	07	C8	C9	0D	4D	1201:90	0A	AD	5B	03	C9	DC	B0	05	14A9:00	A2	00	BD	C0	03	99	80	1C	
0F61:D0	F5	C0	02	B0	07	20	75	F4	1209:03	4C	15	12	A9	11	8D	5D	8F	14B1:03	E8	C8	BD	C0	03	99	80	50	
0F69:09	20	4C	09	60	8C	E8	07	3C	1211:03	8D	5B	03	A9	00	8D	6B	89	14B9:03	E8	C8	A9	F8	99	80	03	83	
0F71:A9	08	A2	08	A0	FF	20	BA	3B	1219:03	AD	00	DC	29	10	8D	71	0E	14C1:C8	C0	30	D0	E6	4C	D9	14	C1	
0F79:FF	AD	E8	07	A2	EB	A0	07	9D	1221:03	AD	00	DC	29	0F	C9	0E	27	14C9:00	00	00	00	00	00	00	00	F1	
0F81:20	BD	FF	A9	00	85	22	A9	BD	1229:D0	13	CE	5D	03	AD	6E	03	D8	14D1:00	00	00	00	00	00	00	00	F9	
0F89:20	85	23	A9	22	A2	FF	A0	54	1231:D0	08	AD	71	03	F0	03	20	8E	14D9:A0	00	B9	C9	14	99	B0	03	91	
0F91:9F	20	D8	FF	20	4C	09	20	07	1239:8D	15	4C	F4	12	C9	0D	D0	E4	14E1:C8	C0	0F	D0	F5	60	20	50	4F	
0F99:75	09	60	20	28	09	4C	BB	7C	1241:13	EE	5D	03	AD	6E	03	D0	84	14E9:15	A2	00	A0	00	8C	6F	03	63	
0FA1:0F	93	0E	4E	41	4D	45	20	BC	1249:F1	AD	71	03	F0	EC	20	60	0C	14F1:8C	70	03	AD	5B	03	8D	71	2B	
0FA9:4F	46	20	46	49	4C	45	20	8F	1251:15	4C	F4	12	C9	07	D0	13	F1	14F9:03	AD	5D	03	8D	72	03	A9	D0	
0FB1:54	4F	20	4C	4F	41	44	3A	D8	1259:EE	5B	03	AD	6E	03	D0	DA	03	1501:80	8D	6D	03	B9	C0	03	2D	B0	
0FB9:20	00	A2	00	86	C6	BD	A2	A9	1261:AD	71	03	F0	D5	20	E1	15	30	1509:6D	03	F0	11	8C	6F	03	8E	90	
0FC1:0F	F0	07	20	D2	FE	ED	4C	3B	1269:4C	F4	12	C9	0B	D0	13	CE	60	1511:70	03	A0	00	20	15	11	AC	6C	
0FC9:BF	0F	A0	00	20	CF	FF	99	79	1271:5B	03	AD	6E	03	D0	C3	AD	31	1519:6F	03	AE	70	03	EE	5B	03	26	
0FD1:EB	07	C8	C9	0D	D0	F5	C0	B5	1279:71	03	F0	BE	20	BA	15	4C	83	1521:4E	6D	03	90	DF	A9	80	8D	6B	
0FE9:02	B0	07	20	75	09	20	4C	64	1281:F4	12	C9	06	D0	19	CE	5D	24	1529:6D	03	C8	E8	E0	02	90	D4	77	
0FE1:09	60	8C	E8	07	A9	08	A2	4E	1289:03	EE	5B	03	AD	6E	03	D0	84	1531:A2	00	AD	5B	03	38	E9	10	F4	
0FE9:08	A0	FF	20	BA	FF	AD	E8	50	1291:A9	AD	71	03	F0	A4	20	E1	90	1539:8D	5B	03	EE	5D	03	C0	20	E8	
0FF1:07	A2	EB	A0	07	20	BD	FF	F7	1299:15	20	8D	15	4C	F4	12	C9	77	1541:90	C2	AD	71	03	8D	5B	03	39	
0FF9:20	4C	09	A9	00	A2	FF	A0	22	12A1:AD	D0	19	EE	5D	03	EE	5B	BE	1549:AD	72	03	8D	5D	03	60	A9	81	
1001:FF	20	D5	FF	20	75	09	20	EC	12A9:03	AD	6E	03	D0	8C	AD	71	3E	1551:0E	8D	F8	07	A9	01	8D	15	F6	
1009:4C	09	60	A9	02	8D	5C	03	3A	12B1:03	F0	87	20	60	15	20	E1	FF	1559:D0	A9	03	8D	27	D0	60	A0	6D	
1011:A9	00	8D	20	D0	AD	6E	03	D6	12B9:15	4C	F4	12	C9	09	D0	19	68	1561:02	AD	C0	03	8D	BE	03	AD	5B	
1019:D0	09	20	A8	14	20	50	15	49	12C1:EE	5D	03	CE	5B	03	AD	6E	B2	1569:C1	03	8D	BF	03	B9	C0	03	66	
1021:4C	27	10	20	2C	14	AD	1A	5C	12C9:03	D0	28	AD	71	03	F0	23	20	1571:88	88	99	C0	03	C8	C8	C8	D6	
1029:D4	C9	0C	90	72	AD	19	D4	02	12D1:20	60	15	20	BA	15	4C	F4	7A	1579:C0	20	90	F1	AD	BE	03	8D	39	
1031:C9	0C	90	6B	AD	19	D4	8D	0B	12D9:12	C9	0A	D0	16	CE	5D	03	71	1581:DE	03	AD	BF	03	8D	DF	03	9E	
1039:6C	03	20	1E	14	A5	C5	C9	C2	12E1:CE	5B	03	AD	6E	03	D0	0B	AB	1589:20	A8	14	60	A0	1E	AD	DE	2E	
1041:01	D0	03	4C	E5	10	AD	19	1F	12E9:AD	71	03	F0	06	20	8D	15	91	1591:03	8D	BE	03	AD	DF	03	8D	29	
1049:D4	CD	6C	03	D0	8D	38	E9	49	12F1:20	BA	15	A5	C5	C9	37	D0	66	1599:BF	03	B9	C0	03	C8	C8	99	0E	
1051:06	C9	F0	B0	D1	8D	5B	03	8E	12F9:0E	A9	00	8D	6E	03	20	A8	D0	15A1:C0	03	88	88	88	C0	FF	D0	9E	
1059:AD	1A	D4	8D	6C	03	20	1E	18	1301:14	20	50	15	4C	1A	12	C9	4D	15A9:F1	AD	BE	03	8D	C0	03	AD	63	
1061:14	AD	1A	D4	CD	6C	03	D0	7E	1309:2C	D0	0B	A9	01	8D	6E	03	93	15B1:BF	03	8D	C1	03	20	A8	14	48	
1069:BD	38	E9	06	8D	5D	03	18	14	1311:20	2C	14	4C	1A	12	C9	12	58	15B9:60	A0	00	18	B9	C0	03	6A	FE	
1071:69	32	8D	01	D0	AD	5B	03	8B	1319:D0	0B	20	7A	14	A9	00	8D	EA	15C1:99	C0	03	C8	B9	C0	03	6A	17	
1079:18	69	18	0D	00	D0	AD	01	7B	1321:6E	03	4C	1A	12	C9	35	D0	5D	15C9:99	C0	03	90	A0	88	B9	C0	01	
1081:DC	29	04	8D	27	D0	C9	04	C7	1329:5D	AD	8D	02	D0	06	8D	5C	51	15D1:03	09	80	99	C0	03	C8	C8	D5	
1089:F0	15	A9	0D	8D	27	D0	AD	C5	1331:03	4C	1A	12	C9	01	D0	08	4C	15D9:C0	20	90	DF	20	A8	14	60	A8	
1091:6E	03	C9	00	8D	06	20	E7	A9	1339:A9	02	8D	5C	03	4C	1A	12	BB	15E1:A0	01	18	B9	C0	03	2A	99	3B	
1099:14	4C	A0	10	20	15	11	A5	09	1341:C9	04	D0	06	8D	5C	03	4C	F7	15E9:C0	03	88	B9	C0	03	2A	99	E1	
10A1:C5	C9	01	D0	03	4C	E5	10	69	1349:1A	12	C9	02	D0	08	A9	20	74	15F1:C0	03	90	0C	C8	B9	C0	03	C1	
10A9:C9	37	D0	0E	A9	00	8D	6E	4E	1351:8D	5C	03	4C	1A	12	C9	05	2C	15F9:09	01	99	C0	03	4C	02	16	8B	
10B1:03	20	A8	14	20	50	15	4C	6A	1359:D0	08	A9	40	8D	5C	03	4C	53	1601:C8	C8	C8	C0	20	90	DB	20	04	
10B9:0C	10	C9	2C	D0	0B	A9	01	E6	1361:1A	12	C9	05	D0	08	A9	40	DC	1609:A8	14	60	20	20	17	A9	00	4D	
10C1:8D	6E	03	20	2C	14	4C	0C	FC	1369:8D	5C	03	4C	1A	12	C9	06	45	1611:85	FD	8D	B9	02	8D	BA	02	8A	
10C9:10	C9	12	D0	11	20	7A	14	C5	1371:D0	08	A9	40	8D	5C	03	4C	6F	1619:8D	A8	02	8D	2B	18	85	FB	10	
10D1:20	A8	14	20	50	15	A9	00	DA	1379:1A	12	C9	07	D0	05	A9	F0	B9	1621:AF	A9	40	8D	5C	03	A9	04	85	F5
10D9:8D	6E	03	4C	0C	10	20	F0	53	1381:8D	5C	03	4C	1A	12	C9	01	58	1629:FE	A9	20	85	FC	A0	00	A2	A8	
10E1:10	4C	27	10	A9	01	8D	20	8F	1389:D0	0B	A9	01	8D	20	D0	A9	58	1631:00	A9	80	8D	BB	02	A9	20	0A	
10E9:D0	A9	00	8D	15	D0	60	AD	10	1391:00	8D	15	D0	60	C9	28	D0	16	1639:91	FD	8C	B9	02	AC	BA	02	15	
10F1:00	DC	29	0F	C9	0D	D0	04	87	1399:08	A9	01	8D	6B	03	4C	1A	41	1641:B1	FB	2D	BB	02	AC	B9	02	DE	
10F9:20	AF	0B	60	C9	0E	D0	04	A9	13A1:12	C9	2B	D0	08	A9	00	8D	2A	1649:C9	00	F0	08	F0	A9	A0	91	FD	A9
1101:20	94	0A	60	C9	0B	D0	04	BF	13A9:6B	03	4C	1A	12	AD	6B	03	92	1651:20	67	16	AD	2B	18	C9	03	55	
1109:20	62	0C	60	C9	07	D0	03	6A	13B1:F0	0E	AD	6E	03	D0	06	20	F7	1659:D0	DC	20	28	09	20	48	17	1C	
1111:20	17	0D	60	AD	5B	03	C9	5B	13B9:E7	14	4C	C1	13	20	15	11	D2	1661:20	C0	16	4C	A4	09	C8	8C	BC	
1119:E9	90	01	60	4A	4A	8D	18		13C1:20	1E	14	AD	5B	03	69	18	AE	1669:B9	02	C0	00	D0	02	E6	FE	66	
1121:5F	03	AD	5D	03	C9	B9	90	82	13C9:8D	00	D0	AD	5D	03	69	32	A7	1671:AD	BB	02	18	4A	8D	BB	02	27	
1129:01	60	4A	4A	8D	60	03	1E		13D1:8D	01	D0	AD	5B	03	C9	D8	47	1679:B0	01	60	A9	80	8D	BB	02	98	
1131:AD	5D	03	29	07	8D	5E	03	A2	13D9:90	0C	38	E9	10	8D	5B	03	61	1681:A5	FB	18	69	08	85	FB			

1741:A5 FC C9 DC D0 E9 60 20 97	19E9:55 0D 0D 44 20 44 45 46 D2	1C91:00 E8 E0 08 D0 DD A2 00 E3
1749:22 18 A0 00 A5 C5 C9 01 7B	19F1:49 4E 45 53 20 42 52 55 3E	1C99:A0 00 B9 84 03 91 FB C8 C0
1751:D0 04 20 1E 14 60 AD 00 4C	19F9:53 48 0D 2F 20 53 45 4C A1	1CA1:C0 08 D0 F6 A0 00 A5 FB 12
1759:DC 29 0F C9 0F D0 06 20 A6	1A01:45 43 54 53 20 42 52 55 6C	1CA9:18 69 08 85 FB 90 09 E6 BC
1761:2D 18 4C 4D 17 C9 0E D0 57	1A09:53 48 0D 2E 20 53 45 4C A2	1CB1:FC A5 0C C9 A0 D0 01 60 B8
1769:06 20 C2 17 4C 4D 17 C9 FB	1A11:45 43 54 53 20 50 45 4E 93	1CB9:A2 00 4C 5C 1C 20 3F 1C 8E
1771:06 D0 09 20 C2 17 20 F2 9F	1A19:50 4F 49 4E 54 0D 2B 20 A4	1CC1:2D AF 08 20 CC FF A9 00 B2
1779:17 4C 4D 17 C9 07 D0 06 73	1A21:44 52 41 57 2F 45 52 41 1E	1CC9:80 6A 03 A2 FF A0 FF 20 90
1781:20 F2 17 4C 4D 17 C9 05 83	1A29:53 45 0D 2D 20 53 54 4F 13	1CD1:BD FF A9 04 A2 04 A0 05 C9
1789:D0 09 20 DA 17 20 F2 17 4A	1A31:50 53 20 44 52 41 57 49 3A	1CD9:20 BA FF 20 C0 FF A2 04 D2
1791:4C 4D 17 C9 0D D0 06 20 90	1A39:4E 47 0D 46 49 52 45 20 AA	1CE1:20 C9 FF A0 00 4C EE 1C D1
1799:DA 17 4C 4D 17 C9 09 D0 1C	1A41:42 55 54 54 4F 4E 20 53 03	1CE9:1B 00 1B 33 0F B9 E9 1C 95
17A1:09 20 DA 17 20 0A 18 4C CE	1A49:54 4F 50 53 20 52 4F 4C EF	1CF1:2D D2 FF C8 C0 05 D0 F5 2D
17A9:4D 17 C9 0B D0 06 20 0A 17	1A51:4C 49 4E 47 0D 3D 20 46 20	1CF9:A2 00 20 05 1D 4C 13 1D 35
17B1:18 4C 4D 17 C9 0A D0 06 38	1A59:4C 41 4E 4B 20 53 50 45 B6	1D01:1B 7A C0 03 A0 00 B9 01 29
17B9:20 0A 18 20 C2 17 4C 4D D7	1A61:45 44 0D 20 2B 53 48 89	1D09:1D 20 D2 FF C8 C0 04 D0 56
17C1:17 A5 FB 38 E9 28 85 FB DE	1A69:49 46 54 4E 55 4C 4C CC	1D11:F5 60 A0 00 B1 4B 2D D2 40
17C9:B0 0B C6 FC A5 FC C9 03 73	1A71:0D 20 20 2B 43 54 52 4C 47	1D19:FF 20 D2 FF 20 D2 FF C8 CA
17D1:D0 03 20 22 18 20 2D 18 03	1A79:20 31 2F 32 0D 20 20 2B 67	1D21:C0 00 D0 F0 E6 4C B1 4B FB
17D9:60 A5 FB 18 69 28 85 FB 95	1A81:43 4F 4D 4D 4F 44 4F 52 26	1D29:20 D2 FF 20 D2 FF 20 D2 D3
17E1:90 0B E6 FC A5 FC C9 08 84	1A89:45 20 41 57 2F 45 52 41 1E	1D31:FF C8 C0 40 D0 FF A5 4B 9A
17E9:D0 03 20 22 18 20 2D 18 1B	1A91:4F 57 0D 45 20 45 52 41 35	1D39:18 69 40 85 4B 90 02 E6 C1
17F1:60 A5 FB 18 69 01 85 FB 11	1A99:53 45 0D 57 20 44 52 41 D7	1D41:4C 20 05 1D A0 00 B1 4D D1
17F9:90 0B E6 FC A5 FC C9 08 9C	1AA1:57 0D 0D 5B 52 45 54 55 C1	1D49:20 D2 FF 20 D2 FF 20 D2 F3
1801:D0 03 20 22 18 20 2D 18 34	1AA9:52 4E 5D 00 93 54 4F 55 28	1D51:FF C8 C0 00 D0 F0 E6 4E 3C
1809:60 A5 FB 38 E9 01 85 FB 30	1AB1:43 48 54 41 42 4C 45 54 5A	1D59:B1 4D 20 D2 FF 20 D2 FF 17
1811:B0 0B C6 FC A5 FC C9 03 BC	1AB9:20 4D 45 4E 55 0D 0D 44 1C	1D61:20 D2 FF C8 C0 40 D0 F0 86
1819:D0 03 20 22 18 20 2D 18 4C	1AC1:2C 20 2F 2C 20 2E 2C 20 EE	1D69:A5 4D 18 69 40 85 4D 90 A6
1821:60 A9 06 85 FC A9 B9 85 8C	1AC9:45 2C 20 57 20 53 41 4D 43	1D71:02 E6 4E E8 20 A9 1D E0 81
1829:FB 60 00 0B F1 B8 8D 2C 34	1AD1:45 20 41 53 20 4A 4F 59 30	1D79:19 F0 07 E0 32 F0 15 4C 37
1831:18 A9 5B 91 FB 20 1E 14 0D	1AD9:53 54 49 43 4B 0D 4A 4F 9C	1DB1:FB 1C A0 00 B9 4F 00 99 79
1839:AD 2C 18 91 FB A5 C5 C9 33	1AE1:59 53 54 49 43 4B 20 4D 8B	1D89:4B 00 C8 C0 04 D0 F5 4C 2A
1841:40 F0 10 C9 2C D0 04 A9 C2	1AE9:4F 56 45 53 20 43 41 4E 18	1D91:FB 1C 1B 00 A0 00 B9 93 40
1849:A0 91 FB C9 2F D0 04 A9 B8	1AF1:56 41 53 0D 0D 5B 52 45 9C	1D99:1D 20 D2 FF C8 C0 02 D0 E2
1851:20 91 FB 60 20 28 09 A2 D1	1AF9:54 55 52 4E 5D 00 20 CC D4	1DA1:F5 20 CC FF 20 3F 1C 60 0F
1859:00 86 C6 BD AA 18 D0 06 3D	1B01:FF A2 FF A0 FF 20 BD FF E5	1DA9:A9 0A 20 D2 FF 60 60 78 27
1861:20 A1 18 4C 6E 18 20 D2 B8	1B09:A9 04 A2 04 A0 00 20 BA A9	1DB1:A9 BD 8D 14 03 A9 1D 8D A9
1869:FF E8 4C 5C 18 BD A9 19 47	1B11:FF 20 C0 FF A2 04 20 C9 96	1DB9:15 03 58 60 A5 C5 C9 0E 36
1871:D0 06 20 A1 18 4C 80 18 B4	1B19:FF A9 38 85 4B 85 4D 85 A9	1DC1:D0 08 A9 00 8D D7 1D 4C ED
1879:20 D2 FF E8 4C 6E 18 BD 07	1B21:4F 85 51 A9 41 85 4C A9 87	1DC9:D4 1D C9 09 D0 05 A9 01 6E
1881:DC 19 D0 06 20 A1 18 4C E4	1B29:81 85 4E A9 21 85 50 A9 4F	1DD1:8D D7 1D 4C 31 EA 00 52 B8
1889:92 18 20 D2 FF E8 4C 80 F6	1B31:61 85 52 A2 00 A0 00 20 90	1DD9:4A 20 42 49 58 42 59 00 9C
1891:18 BD AD 1A D0 03 4C A1 61	1B39:1C 1C B1 4B 20 2B 1C C0 16	
1899:18 20 D2 FF E8 4C 92 18 ED	1B41:08 90 F4 E8 E6 4C A5 4B CB	
18A1:A2 00 A5 C5 C9 01 D0 FA 23	1B49:20 3B 1C 85 4B 90 02 E6 C1	
18A9:60 93 42 49 47 53 43 52 2C	1B51:4C E0 19 90 E0 A2 00 A0 44	
18B1:45 45 4E 0D 20 20 20 20 52	1B59:00 20 1C 1C B1 4D 20 2B 0B	
18B9:20 20 20 20 20 0D 0D 0D 64	1B61:1C C0 08 90 F4 E8 A5 4D C3	
18C1:4A 4F 59 53 54 49 43 4B E4	1B69:20 3B 1C 85 4D 90 02 E6 F1	
18C9:20 4D 4F 56 45 53 20 43 A7	1B71:4E E6 4E E0 19 90 E0 A2 CF	
18D1:41 4E 56 41 53 0D 5A 20 B8	1B79:00 A9 0A 20 D2 FF A5 4B 8A	
18D9:5A 4F 4F 4D 53 20 54 4F DC	1B81:20 22 1C 85 4B 80 02 C6 14	
18E1:50 20 4C 45 46 54 20 43 27	1B89:4C A5 4C 20 26 1C 85 4C D3	
18E9:4F 52 4E 45 52 0D 4A 20 EF	1B91:45 4D 20 22 1C 85 4D B0 56	
18F1:53 45 4C 45 43 54 53 20 2D	1B99:02 C6 4E A5 4E 20 26 1C 02	
18F9:4A 4F 59 53 54 49 43 4B 1D	1BA1:85 4E C9 80 B0 8F A0 00 74	
1901:0D 4B 20 54 4F 55 43 48 74	1BA9:20 1C 1C B1 4F 20 2B 1C 03	
1909:54 41 42 4C 45 54 0D 2A 82	1BB1:C0 08 90 F4 E8 A5 4F 20 48	
1911:20 42 49 52 44 27 53 20 B7	1BB9:3B 1C 85 4F 90 02 E6 50 E4	
1919:45 59 45 20 56 49 45 57 A8	1BC1:E6 50 E0 19 90 E0 A2 00 7A	
1921:0D 53 20 53 41 56 45 53 29	1BC9:A0 00 20 1C 1C B1 51 20 80	
1929:20 47 52 41 50 48 49 43 15	1BD1:2B 1C C0 08 90 F4 E8 A5 0D	
1931:0D 4C 20 4C 4F 41 44 53 21	1BD9:51 20 3B 1C 85 51 90 02 7E	
1939:20 47 52 41 50 48 49 43 25	1BE1:E6 52 E6 52 E0 19 90 E0 8F	
1941:0D 50 20 50 52 49 4E 54 BF	1BE9:A2 00 A9 0A 20 D2 FF A5 39	
1949:53 0D 2D 20 50 48 4F 54 A6	1BF1:4F 20 22 1C 85 4F B0 02 AA	
1951:4F 20 4E 45 47 41 54 49 82	1BF9:C6 50 A5 50 20 26 1C 85 B8	
1959:56 45 0D 43 55 52 53 4F C7	1C01:50 A5 51 20 22 1C 85 51 D4	
1961:52 20 4B 45 59 53 20 46 21	1C09:B0 02 C6 52 A5 52 20 26 F4	
1969:4C 49 50 20 53 43 52 45 B1	1C11:1C 85 52 C9 60 B0 8F 20 A4	
1971:45 4E 20 54 4F 20 53 43 08	1C19:CC FF 60 A9 08 20 D2 FF C4	
1979:52 45 45 4E 0D 43 4C 45 07	1C21:60 38 E9 48 60 38 E9 1F 30	
1981:41 52 20 45 45 59 20 45 B6	1C29:60 00 8D 2A 1C 29 80 4A B6	
1989:52 41 53 45 53 20 56 49 05	1C31:0D 2A 1C 09 80 20 D2 FF B8	
1991:53 49 42 4C 45 20 53 43 61	1C39:C8 60 18 69 40 60 20 05 50	
1999:52 45 45 4E 0D 0D 5B 52 79	1C41:0F A9 20 85 FC A9 00 85 DB	
19A1:45 54 55 52 4E 5D 0D 00 5D	1C49:FB A0 00 A2 00 A9 00 99 13	
19A9:93 5A 4F 4F 4D 20 4D 45 E5	1C51:A7 02 C8 18 4A C0 08 D0 AE	
19B1:4E 55 0D 0D 2E 20 41 44 8B	1C59:F6 A0 00 A9 00 99 84 03 42	
19B9:44 53 20 50 49 58 45 4C 6E	1C61:C8 C0 08 D0 F6 A0 00 B1 28	
19C1:0D 2C 20 52 45 4D 4F 56 03	1C69:FB 99 8C 03 C8 C0 08 D0 F1	
19C9:45 53 20 50 49 58 45 4C FE	1C71:F6 A0 00 BD 8C 03 39 A7 B3	
19D1:0D 0D 5B 52 45 54 55 52 D6	1C79:02 D0 0F BD A7 02 8D B0 B5	
19D9:4E 5D 00 93 4A 4F 59 53 59	1C81:02 B9 84 03 0D B0 02 99 B2	
19E1:54 49 43 4B 20 4D 45 4E BC	1C89:84 03 C8 C0 08 D0 E4 A0 D7	

Oil Defense

See instructions in article on page 45 before typing in.

0801:0E 08 0A 00 9E 20 32 30 65
0809:36 32 00 00 00 A0 00 A9 EC
0811:00 99 00 C0 A9 FF 99 FF 14
0819:32 B9 68 0F 99 00 30 B9 95
0821:68 10 99 00 31 B9 68 11 EE
0829:99 00 32 B9 67 12 99 BF 5E
0831:33 88 D0 DB 8C 29 D0 8C 0C
0839:2A D0 8C 2B D0 8C 20 D0 A0
0841:8C 21 D0 8C 08 D0 A0 02 89
0849:8C 2C D0 8C 2D 8C 2E 81
0851:D0 8C 06 C0 8C 2D 8C 2D 4D
0859:C8 8C 26 D0 8C 8C 27 D0 5A
0861:C8 8C 24 D0 8C 8C 23 D0 1A
0869:8C 28 D0 A0 8A 8C 07 C0 3F
0871:C8 8C 22 D0 A0 0F 8C 00 B4
0879:C8 8C 18 D4 C8 8C 10 D0 C6
0881:8C 14 C0 8C 16 C0 A0 1C CE
0889:8C 17 D0 8C 8C 1D D0 A0 67
0891:CA 8C F8 07 C8 8C F9 07 D2
0899:C8 8C FA 07 C8 8C FB 07 78
08A1:C8 8C FC 07 C8 8C FD 07 C4
08A9:8C FE 07 8C FF 07 A9 E0 B9
08B1:8D 1C D0 A9 A0 8D 0D 50
08B9:A9 D3 8D 01 D0 A9 90 8D 31
08C1:05 D0 8D 07 D0 8D 09 D0 4A
08C9:A9 30 8D 04 D0 A9 98 8D 98
08D1:06 D0 A9 FD 8D 15 D0 A9 3A
08D9:8E 20 D2 FF AD 1E D0 18 33
08E1:AD 18 D0 29 F0 69 0C 8D 4E
08E9:18 D0 AD 11 D0 09 40 8D B9
08F1:11 D0 20 AA 0E 20 10 0D B2
08F9:EA 20 20 9F 0E 20 75 0E 22
0901:20 2A 0E 20 FF 0B A2 06 E8
0909:20 66 0B AD 00 C0 4A F0 89
0911:10 A8 88 F0 0C 8C 01 C0 CA

0919:20	F9 0D AC 01 C0 4C 13 DC	0BC1:20	56 0B 4C E6 0B C9 02 9C	0E69:AD	15 D0 49 02 8D 15 D0 91
0921:09	20 43 0A 20 FF 0B CE AE	0BC9:F0	10 BD 09 D0 C9 FF D0 23	0E71:8C	FD C0 60 AC F9 CA B9 0E
0929:05	C0 AE 05 C0 D0 17 CE 5A	0BD1:03	20 EA 0B FE 09 D0 4C 89	0E79:00	04 C9 17 D0 06 20 97 B7
0931:06	C0 AE 06 C0 D0 0F AD C1	0BD9:E6	0B BD 09 D0 D0 03 20 5E	0E81:0E	99 00 D8 B9 00 05 C9 3A
0939:00	C0 C9 0E 0B 03 EE 00 05	0BE1:EA	0B DE 09 D0 CA D0 A4 94	0E89:17	D0 06 20 97 0E 99 00 50
0941:C0	A2 03 8D 06 C0 20 66 6F	0BE9:60	AD 10 D0 5D F3 0B 8D 09	0E91:D9	88 8C F9 CA 60 AD 04 25
0949:0B	20 2A 0E 20 7A 09 20 2C	0BF1:10	D0 60 20 00 40 00 80 D3	0E99:DC	29 07 69 01 60 A0 06 B6
0951:E4	FF F0 0E 20 75 0E 20 B7	0BF9:00	01 02 00 02 03 A0 03 F0	0EA1:A2	00 CA D0 FD 88 D0 F8 22
0959:9F	0E 20 E4 FF F0 F5 20 E0	0C01:B9	FC 07 C9 CF D0 06 88 09	0EA9:60	A9 03 85 FC A9 FF 85 2D
0961:2A	0E 20 FF 0B 20 63 0D BC	0C09:D0	F6 4C 12 0C 20 61 0C A1	0EB1:FB	A9 DB 85 FE A9 E7 85 FD
0969:20	E1 FF D0 06 A9 15 8D 9F	0C11:60	AD 71 0C C9 73 F0 03 B4	0EB9:FD	A9 13 8D EC 0E A9 15 82
0971:18	D0 60 20 CF 0C 4C FB 15	0C19:4C	0E 0C AC FE C0 D0 26 E9	0EC1:8D	E7 0E 8D F5 0E A2 A6 D0
0979:08	AD 08 C0 F0 20 AD FD 69	0C21:AC	FD C0 F0 2B A0 17 A9 E9	0EC9:38	A5 FD FD 4D 13 85 FD CA
0981:07	C9 FF F0 06 EE FD 07 87	0C29:00	99 FF D3 88 D0 FA A9 0C	0ED1:A5	FE E9 00 85 FE BD A7 09
0989:4C	9F 09 A9 00 8D 0A D0 80	0C31:01	8D 18 44 A9 80 8D 05 E3	0ED9:12	BC AD 13 91 FD 8D 00 6F
0991:8D	0B D0 8D 08 C0 A9 CF 86	0C39:D4	A9 F0 8D 06 D4 8D 00 BB	0EE1:FB	CA D0 E4 BC 84 16 F0 2C
0999:8D	FD 07 20 EA AD AD 09 B4	0C41:D4	A9 51 8D 04 D4 CE 00 42	0EE9:23	BD F4 14 91 FB 88 D0 45
09A1:C0	F0 20 AD AE 07 C9 FF D6	0C49:44	CE 02 44 EE 05 44 60 30	0EF1:FB	18 BD 84 16 65 FD 85 D5
09A9:F0	06 EE FE 07 4C C4 09 7F	0C51:A9	00 8D 05 D4 8D 06 D4 FD	0EF9:FB	90 02 E6 FC E8 D0 E4 F8
09B1:A9	00 8D 0C D0 8D 0D D0 B2	0C59:8D	04 D4 8D FE C0 60 06 6E	0F01:EE	E7 0E EE EC 0E EE F5 B4
09B9:8D	09 C0 A9 CF 8D FE 07 41	0C61:AC	60 0C 88 F0 04 8C 60 03	0F09:0E	4C 05 0E A9 BF 85 FB 32
09C1:20	EA 09 AD 0A C0 F0 20 EF	0C69:0C	60 A0 06 8C 60 0C 4C 5E	0F11:A9	FF 85 FD A9 33 85 FC B6
09C9:AD	FF 07 C9 FF F0 06 EE EE	0C71:73	0C A0 05 B9 C9 0C 99 51	0F19:85	FE A2 30 A0 40 8E 21 55
09D1:FF	07 4C E9 09 A9 00 8D 4A	0C79:01	D4 88 D0 F7 A9 0F 8D 77	0F21:C0	38 AD 16 17 6D 19 17 7C
09D9:0E	D0 8D 0F 8D 0A C0 5B	0C81:18	44 A0 1F A2 05 8C 02 01	0F29:6D	1A 17 8D 15 17 A2 04 8E
09E1:A9	CF 8D FF 07 20 EA 09 06	0C89:D4	8E 01 D4 8E C6 0C 8C 51	0F31:BD	15 17 9D 16 17 CA 10 E2
09E9:60	18 78 FB AD 10 C0 69 69	0C91:C5	0C A9 99 8D 71 0C 60 09	0F39:F7	CD 20 C0 B0 05 A9 00 C3
09F1:99	8D 10 C0 AD 11 C0 69 DE	0C99:AE	C6 0C AC C5 0C CA D0 CB	0F41:4C	47 0F B1 FB 4A 91 FD 7E
09F9:09	8D 11 C0 AD 12 C0 69 C2	0CA1:E5	88 88 C0 11 D0 DD A9 1D	0F49:88	D0 D5 18 A5 FD 69 40 54
0A01:00	8D 12 C0 AD 13 C0 69 6B	0CA9:73	8D 71 0C A9 00 8D 00 36	0F51:85	FD A5 FE 69 00 85 FE AB
0A09:00	8D 13 C0 38 AD 14 C0 50	0CB1:D4	8D 01 D4 8D 02 D4 8D B0	0F59:AD	20 C0 69 05 8D 20 C0 64
0A11:E9	01 8D 14 C0 AD 15 C0 F4	0CB9:03	D4 8D 04 D4 8D 05 D4 36	0F61:AE	21 C0 CA D0 B6 60 3C 42
0A19:E9	00 8D 15 C0 D8 58 A0 DF	0CC1:8D	06 D4 60 13 01 00 CA 2A	0F69:66	6E 76 66 66 3C 00 18 C7
0A21:03	A2 00 B9 10 C0 4A 4A 5D	0CC9:CA	48 0F 41 09 09 AD 3E 55	0F71:18	38 18 18 18 7E 00 3C 25
0A29:4A	4A 00 09 9D 28 07 E8 9A	0CD1:33	D0 3A AD 7E 33 D0 35 71	0F79:66	06 0C 30 60 7E 00 3C 0A
0A31:B9	10 C0 29 0F 09 00 9D 0B	0CD9:AD	BE 33 D0 30 A9 08 8D B1	0F81:66	06 1C 06 66 3C 00 06 62
0A39:28	07 E8 88 10 E5 20 10 31	0CE1:2A	D0 A9 C9 8D FB 07 A2 52	0F89:0E	1E 66 7F 06 06 00 7E C1
0A41:0D	60 AD 1E D0 8D FF C3 0C	0CE9:50	20 D8 0D CA D0 FA A2 50	0F91:60	7C 06 06 66 3C 00 3C 80
0A49:AD	FF C3 29 22 C9 22 D0 8C	0CF1:50	A9 C8 8D FB 07 20 D8 A3	0F99:66	60 7C 66 66 3C 00 7E 9B
0A51:1F	AD FF C3 38 AD 0B D0 FB	0CF9:0D	CA D0 FA 20 E4 FF F0 9A	0FA1:66	0C 18 18 18 18 00 3C D7
0A59:ED	03 D0 C9 20 B0 11 38 F9	0D01:E1	8E 0F D0 8E D0 8E 77	0FA9:66	66 3C 66 66 3C 00 3C E2
0A61:AD	0A D0 ED 02 D0 C9 16 C4	0D09:0B	D0 4C 0E 08 60 01 A2 AD	0FB1:66	66 3E 06 66 3C 00 18 01
0A69:B0	06 A9 01 8D 08 C0 EA 95	0D11:00	A0 01 B9 14 C0 4A 4A 91	0FB9:3C	66 7E 66 66 66 3C 3C CE
0A71:AD	FF C3 29 42 C9 42 D0 F5	0D19:4A	4A 09 00 9D 42 07 E8 F8	0FC1:66	60 60 60 66 3C 00 7E DF
0A79:1F	AD FF C3 38 AD 0D D0 28	0D21:B9	14 C0 29 0F 09 00 9D 02	0FC9:60	60 78 60 60 7E 00 63 A5
0A81:ED	03 D0 C9 20 B0 11 38 22	0D29:42	07 E8 88 10 E5 AC 15 52	0FD1:77	7F 6B 63 63 63 00 7C 54
0A89:AD	0C D0 ED 02 D0 C9 16 6D	0D31:C0	D0 2E AC 14 C0 C0 03 98	0FD9:66	66 7C 78 6C 66 00 3C 15
0A91:B0	06 A9 01 8D 09 C0 EA C1	0D39:B0	27 AD 0A D0 08 AD 53	0FE1:66	66 66 66 66 3C 00 3C 60
0A99:AD	FF C3 29 82 C9 82 D0 A0	0D41:15	D0 29 DF 8D 15 D0 AD 4D	0FE9:66	60 3C 06 66 3C 00 00 5F
0AA1:1F	AD FF C3 38 AD 0F D0 54	0D49:0C	D0 D0 AD 15 D0 29 C4	0FF1:00	00 E0 F0 38 18 18 A5
0AA9:ED	03 D0 C9 20 B0 11 38 4A	0D51:BF	8D 15 D0 AD 0E D0 D0 76	0FF9:18	1C 0F 07 00 00 00 18 95
0AB1:AD	0E D0 ED 02 D0 C9 16 16	0D59:08	AD 15 D0 29 7F 8D 15 0A	1001:18	38 F0 E0 00 00 00 C0 28
0AB9:B0	06 A9 01 8D 0A C0 EA ED	0D61:D0	60 AD 14 C0 D0 27 AD 3F	1009:C0	C0 C0 C0 C0 FF 0F C0 A4
0ACL:AD	FF C3 29 01 F0 03 8D 17	0D69:15	C0 D0 22 A2 50 20 CE DF	1011:E0	70 38 1C 0E 07 03 3F 58
0AC9:03	C0 AC 02 C0 88 D0 12 21	0D71:0D	CA D0 FA A9 00 8D 2A 21	1019:1F	8F C7 E3 F1 F8 FC 00 51
0ADD:AD	03 C0 F0 0D AD 00 C0 84	0D79:D0	A9 CD 8D FB 07 A2 50 8A	1021:00	00 88 00 00 00 00 FF 42
0AD9:C9	01 F0 06 CE 00 C0 8C 16	0D81:20	D8 0D CA D0 FA 20 E4 C7	1029:FF	FF FF FF FF FF FF FF 49
0AE1:03	C0 8C 02 C0 CE 07 C0 69	0D89:FF	F0 E1 4C 90 0D 60 78 D2	1031:E7	E7 E7 E7 E7 FF FF 03 30
0AE9:AC	07 C0 D0 68 AD FF C3 F8	0D91:F8	18 AD 16 C0 69 05 8D 88	1039:07	0E 1C 38 70 E0 C0 FF EF
0AF1:29	04 F0 1A AD FF C3 29 79	0D99:16	C0 8D 14 C0 AD 17 C0 8D	1041:FF	C0 C0 C0 C0 C0 C0 FF 40
0AF9:02	D0 13 A0 40 88 B9 00 47	0DA1:69	00 8D 17 C0 8D 15 C0 BA	1049:FF	03 03 03 03 03 03 FF E4
0B01:33	D0 FA A9 00 A2 03 C8 38	0DA9:D8	58 A9 00 8D 0B D0 8D 43	1051:C3	81 81 81 81 C3 FF 00 17
0B09:99	00 33 CA D0 F9 AD FF C8	0DB1:0D	D0 8D 0F D0 8D FD C0 A2	1059:00	00 07 0F 1C 18 18 FF BC
0B11:C3	29 08 F0 1A AD FF C3 AE	0DB9:8D	FE C0 A9 FD 8D 15 D0 2E	1061:00	00 80 80 80 80 80 00 01
0B19:29	02 D0 13 A0 40 88 B9 60	0DC1:A9	0F 8D 0C 60 68 68 20 BE	1069:00	00 00 00 00 00 00 F7 81
0B21:40	33 D0 FA A9 00 A2 03 83	0DC9:10	0D 4C FB 08 A9 C8 8D 7E	1071:E3	C1 80 C1 E3 F7 FF 66 85
0B29:C8	99 40 33 CA D0 F9 AD 80	0DD1:F0	07 A9 01 8D 2A D0 8E 36	1079:66	66 00 00 00 00 00 07 4E
0B31:FF	C3 29 10 F0 1A AD FF A9	0DD9:0F	0D 20 9F 0E 20 75 0E A6	1081:E7	E7 00 00 E7 E7 E7 FF 3E
0B39:C3	29 02 D0 13 A0 40 88 EC	0DE1:A0	03 8C 02 C1 20 2A 0E AF	1089:7F	3F 1F 0F 07 03 01 00 54
0B41:B9	80 33 D0 FA A9 00 A2 E8	0DE9:20	F9 0D 20 F0 0B AC 02 BD	1091:00	C0 0E F0 F8 FC FE F0 F7
0B49:03	C8 99 80 33 CA D0 F9 AE	0DF1:C1	88 D0 EE AE 0F 0D 60 44	1099:F0	F0 F0 F0 F0 F0 F0 00 C8
0B51:A0	0A 8C 07 C0 AD 04 DC DD	0DF9:AD	00 DC 29 0F C9 0D B0 83	10A1:00	00 00 FF FF FF FF FF C1
0B59:C9	0A B0 08 AD 25 D0 49 5A	0E01:27	C9 09 B0 13 AC 00 D0 6B	10A9:FF	FF FF 00 00 00 00 00 8A
0B61:08	8D 25 D0 60 AD 15 D0 45	0E09:C0	FF D0 08 AD 10 D0 49 B8	10B1:C0	C0 C0 C0 C0 C0 C0 3F 50
0B69:C9	1E B0 0F AD 14 C0 C9 FB	0E11:03	8D 10 D0 EE 00 D0 60 9A	10B9:3F	3F 3F 3F 3F 3F 3F FF 9A
0B71:01	D0 08 AD 15 D0 49 20 B6	0E19:AC	00 D0 D0 08 AD 10 D0 9A	10C1:FE	FC F8 F0 E0 C0 80 00 D9
0B79:8D	15 D0 A2 06 A0 06 AD 4C	0E21:49	03 8D 10 D0 CE 00 D0 E7	10C9:01	03 07 0F 1F 3F 7F 03 F4
0B81:04	DC C9 04 B0 03 99 F8 08	0E29:60	AC FD C0 F0 04 20 59 9D	10D1:03	03 03 03 03 03 03 FC EB
0B89:0B	88 D0 F3 BD F8 0B F0 79	0E31:0E	60 AD 00 DC 29 10 C9 97	10D9:FC	FC FC FC FC FC FC 00 FC
0B91:25	C9 01 D0 06 20 56 B0 42	0E39:00	D0 08 A9 01 8D FD C0 20	10E1:00	00 00 0F 0F 0F 0F FF C5
0B99:4C	B7 0B C9 02 F0 0D BD 6D	0E41:20	45 0E 60 AD 00 D0 8D 23	10E9:FF	FF FF F0 F0 F0 F0 00 46
0BA1:09	D0 C9 CD B0 10 FE 09 53	0E49:02	D0 A9 CA EA 8D 03 D0 E0	10F1:00	00 00 00 00 FF FF FF 12
0BA9:D0	4C B7 0B BD 09 D0 C9 60	0E51:AD	15 D0 49 02 8D 15 D0 79	10F9:FF	FF FF FF FF FF 00 00 1A
0BB1:32	90 03 DE 09 D0 CA BD 32	0E59:AC	03 D0 F0 0B 88 8C 03 4C	1101:00	00 FF FF 18 18 18 C0 35
0BB9:F8	0B F0 29 C9 01 D0 06 B9	0E61:D0	AD 00 D0 8D 02 D0 60 D4	1109:C0	C0 C0 C0 C0 C0 C0 3F A9

Sketch Pad Plus

C2EC:C9	49	F0	34	C9	5A	F0	39	DD
C2FA:C9	51	F0	39	C9	47	F0	3E	F0
C2FC:C9	87	F0	3E	C9	91	F0	11	D2
C304:C9	11	F0	10	C9	1D	F0	0F	87
C30C:C9	9D	F0	0E	C9	57	F0	0D	79
C314:60	4C	42	C3	4C	5D	C3	4C	F0
C31C:78	C3	4C	93	C3	4C	85	C4	B2
C324:A9	05	8D	93	42	20	AB	C5	5C
C32C:60	20	6C	CB	00	A9	5A	8D	20
C334:93	42	20	AB	C5	60	20	BB	80
C33C:CE	60	20	DB	CE	60	20	58	95
C344:C5	A9	01	8D	84	C4	A9	00	9C
C34C:85	02	A9	20	85	03	A9	40	1A
C354:85	3F	A9	21	85	40	4C	AE	2A
C35C:C3	20	58	C5	A9	02	8D	84	2A
C364:C4	A9	38	85	02	A9	3F	85	D2
C36C:03	A9	F8	85	3F	A9	3D	85	F7
C374:40	4C	AE	C3	20	58	C5	A9	D8
C37C:03	8D	84	C4	A9	38	85	02	01
C384:A9	3F	85	03	A9	30	85	3F	E9
C38C:A9	3F	85	40	4C	AE	C3	20	32
C394:58	C5	A9	04	8D	84	C4	A9	E0
C39C:00	85	02	A9	20	85	03	A9	27
C3A4:08	85	3F	A9	20	85	40	4C	F7
C3AC:AE	C3	A9	01	8D	CC	42	8D	73
C3BA:CD	42	A0	00	B1	3F	91	02	77
C3BC:AD	CC	42	C9	28	F0	03	4C	8A
C3C4:D5	C3	AD	84	C4	C9	01	F0	66
C3CC:08	C9	02	F0	04	A9	00	91	72
C3D4:02	AD	CD	42	C9	19	F0	03	3E
C3DC:4C	EE	C3	AD	84	C4	C9	03	67
C3E4:F0	08	C9	04	F0	04	A9	00	4B
C3EC:91	02	C8	C0	08	F0	03	4C	39
C3F4:B8	C3	EE	CC	42	AD	CC	42	19
C3FC:C9	29	D0	12	A9	01	8D	CC	28
C404:42	EE	CD	42	AD	CD	42	C9	3B
C40C:1A	D0	03	4C	6D	C4	AD	84	5A
C414:C4	C9	01	F0	0B	C9	02	F0	16
C41C:0A	C9	03	F0	09	4C	3A	C4	3F
C424:4C	4A	C4	4C	5A	C4	A9	08	05
C42C:8D	6A	42	A9	00	8D	6B	42	49
C434:20	8C	C5	4C	6A	C4	A9	08	30
C43C:8D	6A	42	A9	00	8D	6B	42	59
C444:20	6D	C5	4C	6A	C4	A9	08	78
C44C:8D	6A	42	A9	00	8D	6B	42	69
C454:20	6D	C5	4C	6A	C4	A9	08	88
C45C:8D	6A	42	A9	00	8D	6B	42	79
C464:20	8C	C5	4C	6A	C4	4C	B6	54
C46C:C3	AD	6C	42	85	02	AD	6D	F1
C474:42	85	03	AD	82	C4	85	3F	2D
C47C:AD	83	C4	85	40	60	C1	C1	77
C484:C1	AD	33	46	C9	57	F0	08	BA
C48C:A9	57	8D	33	46	4C	99	C4	0A

C494:A9	00	8D	33	46	A9	00	8D	3E	C73C:1D	C9	04	F0	25	C9	05	F0	A7	C9E4:A0	5A	A9	00	20	91	B3	20	63
C49C:32	46	A9	C7	8D	CB	93	A9	EE	C744:2D	AD	6C	42	8D	8E	42	4C	FE	C9EC:2B	BA	20	0F	BC	A0	75	A9	B6
C4A4:C4	8D	CC	93	A9	BE	8D	8A	B4	C74C:7B	C7	A9	B4	38	ED	6C	42	A0	C9F4:00	20	91	B3	20	14	BB	20	E6
C4AC:91	A9	C4	8D	8B	91	A9	AD	7E	C754:8D	8E	42	4C	7B	C7	AD	6C	1E	C9FC:AA	B1	8C	87	42	AD	78	42	58
C4B4:8D	61	92	8D	7F	92	8D	A5	8F	C75C:42	38	E9	B4	8D	8E	42	4C	1B	CA04:85	02	AD	79	42	85	03	AD	06
C4BC:93	60	20	E4	FF	F0	03	8D	D1	C764:7B	C7	A9	68	38	ED	6C	42	F3	CA0C:7A	42	8D	49	03	AD	7B	42	BD
C4C4:36	46	60	AD	33	46	C9	57	7F	C76C:8D	8E	42	4C	7B	C7	AD	6C	36	CA14:8D	4A	03	AD	7C	42	8D	4B	91
C4CC:F0	03	4C	5C	91	EE	32	46	D1	C774:42	38	E9	68	8D	8E	42	AC	CE	CA1C:03	AD	7D	42	8D	3F	03	AD	8F
C4D4:AD	32	46	C9	01	F0	2C	C9	15	C77C:8E	42	A9	00	20	91	B3	A2	6A	CA24:7E	42	8D	43	03	AD	85	42	8B
C4DC:02	F0	2E	C9	03	F0	30	C9	0C	C784:00	BD	5C	44	95	69	E8	E0	58	CA2C:F0	13	AD	86	42	D0	06	20	9E
C4E4:04	F0	2C	C9	05	F0	2E	C9	E0	C78C:05	D0	F6	A5	61	20	2B	BA	A8	CA34:E7	83	4C	3C	CA	20	A9	83	99
C4EC:06	F0	2A	C9	07	F0	14	C9	85	C794:22	64	E2	20	0F	BC	AC	68	D8	CA3C:CE	85	42	D0	ED	AD	87	42	67
C4F4:08	F0	10	C9	09	F0	24	C9	7B	C79C:42	A9	00	20	91	B3	20	2B	80	CA44:F0	13	AD	88	42	D0	06	20	D6
C4FC:0A	F0	3D	A9	00	8D	32	46	EA	C7A4:BA	A2	00	B5	61	9D	66	44	28	CA4C:57	84	4C	54	CA	20	25	84	23
C504:C4	D1	C4	20	E7	83	4C	45	EF	C7AC:EA	E0	05	D0	F6	20	2B	BC	E1	CA54:CE	87	42	D0	ED	AD	6C	42	C9
C50C:C5	20	25	84	4C	45	C5	20	92	C7B4:8D	89	42	20	0F	BC	A5	61	CF	CA5C:D0	30	AD	6D	42	D0	2B	A5	44
C514:A9	83	4C	45	C5	20	57	84	15	C7BC:20	2B	BA	A2	00	B5	61	9D	DF	CA64:02	8D	CB	03	A5	03	8D	CC	29
C51C:4C	45	C5	20	25	84	20	A9	FE	C7C4:75	44	E8	E0	05	D0	F6	AC	51	CA6C:03	AD	49	03	8D	CD	03	AD	9F
C524:83	AD	41	03	8D	35	46	C9	CC	C7CC:8E	42	A9	00	20	91	B3	A2	BA	CA74:4A	03	8D	CE	03	AD	4B	03	F6
C52C:01	F0	05	A9	01	4C	36	C5	1B	C7D4:00	BD	5C	44	95	69	E8	E0	A8	CA7C:8D	CF	03	AD	3F	03	8D	D0	F9
C534:A9	00	8D	41	03	4C	45	C5	F3	C7DC:05	D0	F6	A5	61	20	2B	BA	F8	CA84:03	AD	43	03	8D	D1	03	4C	A5
C53C:AD	35	46	8D	41	03	4C	C5	98	C7E4:20	6B	E2	20	0F	BC	AC	69	EB	CA8C:C0	CA	AD	CB	03	8D	D2	03	9E
C544:91	A9	60	8D	7F	92	20	67	D5	C7EC:42	A9	00	20	91	B3	20	2B	D0	CA94:AD	CC	03	8D	D3	03	AD	CD	41
C54C:92	A9	AD	8D	7F	92	AD	36	F1	C7F4:BA	A2	00	B5	61	9D	6B	44	82	CA9C:03	8D	D4	03	AD	CE	03	8D	1E
C554:46	4C	8C	91	A5	02	8D	6C	7D	C7FC:EA	E0	05	D0	F6	20	0F	BC	F9	CAA4:D5	03	AD	CF	03	8D	D6	03	97
C55C:42	A5	03	8D	6D	42	A5	3F	AA	C804:A5	61	20	2B	BA	A2	00	BD	95	CAAC:AD	D0	03	8D	D7	03	AD	D1	7E
C564:8D	82	C4	A5	40	8D	83	C4	4E	C80C:75	44	95	69	E8	E0	05	D0	58	CAB4:03	8D	D8	03	A9	00	8D	CA	AD
C56C:60	A5	02	18	6D	6A	42	85	72	C814:F6	A5	61	20	6A	9D	20	71	A0	CABC:03	20	68	8E	AD	6C	42	18	8D
C574:02	A5	03	8D	6B	42	85	03	14	C81C:BF	A2	00	B5	61	9D	7A	44	4C	CAC4:6D	93	42	8D	6C	42	AD	6D	4C
C57C:A5	3F	18	6D	6A	42	85	3F	2B	C824:E8	E0	05	D0	F6	AD	89	42	D3	CACC:42	69	00	8D	6D	42	C9	01	BF
C584:A5	40	6D	6B	42	85	40	60	60	C82C:C9	00	D0	13	A0	01	A9	00	4A	CAD4:D0	08	AD	6C	42	18	C9	6C	C3
C58C:A5	02	38	ED	6A	42	85	02	BA	C834:20	91	B3	A2	00	B5	61	9D	12	CADC:B0	03	4C	19	C7	AD	71	42	C0
C594:A5	03	ED	6B	42	85	03	A5	FB	C83C:66	44	E8	E0	05	D0	F6	A2	39	CAE4:85	02	AD	72	42	85	03	AD	76
C59C:3F	38	ED	6A	42	85	3F	A5	86	C844:00	BD	66	44	95	61	BD	6B	6F	CAEC:73	42	8D	49	03	AD	74	42	0D
C5A4:40	ED	6B	42	85	40	60	20	6B	C84C:44	95	69	E8	E0	05	D0	F1	CF	CAF4:8D	4A	03	AD	75	42	8D	4B	3A
C5AC:E6	86	A5	C6	F0	03	4C	66	01	C854:20	14	BB	20	0E	E3	20	0F	C3	CAFC:03	AD	76	42	8D	3F	03	AD	8F
C5B4:CB	A9	00	8D	EF	03	20	82	B7	C85C:BC	A0	B4	A9	00	20	91	B3	FC	CB04:77	42	8D	43	03	A9	1E	8D	56
C5BC:86	A5	C6	D0	03	4C	26	C6	37	C864:20	2B	BA	20	0F	BC	A0	AE	85	CB0C:15	D0	4C	B5	C5	AD	8D	42	59
C5C4:20	E4	FF	C9	2B	F0	07	C9	2B	C86C:A9	A8	20	A2	BB	20	14	BB	6D	CB14:D0	10	AD	8C	42	18	C9	5A	F6
C5CC:2D	F0	15	4C	F6	C5	EE	EF	2F	C874:20	58	BC	20	AA	B1	8C	81	7C	CB1C:B0	08	A9	01	8D	8B	42	4C	BE
C5D4:03	AD	EF	03	C9	5B	D0	05	DD	C87C:42	8D	82	42	AD	6C	42	8D	38	CB24:65	CB	AD	8D	42	D0	10	AD	13
C5DC:A9	5A	8D	EF	03	4C	BA	C5	09	C884:8C	42	AD	6D	42	8D	8D	42	1F	CB2C:8C	42	18	C9	B4	B0	08	A9	5C
C5E4:CE	EF	03	AD	EF	03	C9	FF	2E	C88C:20	11	CB	AD	8B	42	C9	02	C1	CB34:02	8D	8B	42	4C	65	CB	AD	03
C5EC:D0	05	A9	00	8D	EF	03	4C	D5	C894:F0	17	C9	03	F0	27	C9	04	89	CB3C:8D	42	F0	08	AD	8C	42	18	06
C5F4:BA	C5	18	C9	30	B0	03	4C	85	C89C:F0	37	AD	81	42	8D	8E	42	E9	CB44:C9	0E	B0	08	A9	03	8D	8B	DA
C5FC:06	C6	18	C9	3A	B0	03	4C	C3	C8A4:AD	82	42	8D	8F	42	4C	E6	D3	CB4C:42	4C	65	CB	AD	8C	42	18	BD
C604:09	C6	4C	66	CB	A2	00	8E	2F	C8AC:C8	A9	B4	38	ED	81	42	8D	AE	CB54:C9	68	B0	08	A9	04	8D	8B	85
C60C:EF	03	38	E9	30	AA	E0	00	E5	C8B4:8E	42	A9	00	ED	82	42	8D	DE	CB5C:42	4C	65	CB	A9	05	8D	8B	99
C614:F0	0D	AD	EF	03	18	69	0A	67	C8BC:8F	42	4C	E6	C8	A9	B4	18	0D	CB64:42	60	A9	01	8D	15	D0	60	3D
C61C:8D	EF	03	CA	4C	12	C6	4C	FD	C8C4:6D	81	42	8D	8E	42	A9	00	5F	CB6C:20	36	87	A9	28	8D	6E	03	84
C624:BA	C5	A5	02	8D	71	42	A5	B1	C8CC:6D	82	42	8D	8F	42	4C	E6	DB	CB74:A9	19	8D	6F	03	AD	41	03	24
C62C:03	8D	72	42	AD	49	03	8D	37	C8D4:C8	A9	68	38	ED	81	42	8D	4D	CB7C:8D	90	42	20	82	86	A5	C6	89
C634:73	42	AD	4A	03	8D	74	42	DF	C8DC:8E	42	A9	01	ED	82	42	8D	17	CB84:F0	03	4C	AA	CE	A5	02	8D	28
C63C:AD	4B	03	8D	75	42	AD	3F	FB	C8E4:8F	42	AD	8E	42	18	6D	EF	AA	CB8C:71	42	A5	03	8D	72	42	AD	BA
C644:03	8D	76	42	AD	43	03	8D	B7	C8EC:03	8D	8E	42	AD	8F	42	69	F2	CB94:49	03	8D	73	42	AD	4A	03	DA
C64C:77	42	AD	6E	03	4A	8D	68	87	C8F4:00	8D	8F	42	AD	8E	42	8D	B9	CB9C:8D	74	42	AD	4B	03	8D	75	32
C654:42	C9	00	F0	0B	8D	6A	42	2A	C8FC:8C	42	AD	8F	42	8D	8D	42	B9	CBA4:42	AD	3F	03	8D	76	42	AD	59
C65C:20	A9	83	CE	6A	42	D0	F8	B8	C904:20	11	CB	A9	00	8D	84	42	81	CBAC:43	03	8D	77	42	A9	00	8D	16
C664:AD	F0	33	4A	8D	69	42	C9	0A	C90C:AD	8B	42	C9	02	F0	1D	C9	16	CBBA:45	03	A9	00	85	3F	A9	04	65
C66C:00	F0	33	8D	6A	42	20	57	69	C914:03	F0	2F	C9	04	F0	3F	C9	14	CBBC:85	40	AD	18	D0	29	F7	8D	07
C674:84	CE	6A	42	D0	F8	AC	69	96	C91C:05	F0	51	AD	8E	42	8D	83	8F	CBBC:18	D0	AD	11	D0	29	DF	8D	DB
C67C:42	A9	00	20	91	B3	20	0F	42	C924:42	A9	01	8D	86	42	8D	88	1D	CBCC:11	D0	AD	4D	03	8D	86	02	09
C684:BC	A0	75	A9	00	20	91	B3	39	C92C:42	4C	81	C9	A9	B4	38	ED	3F	CBDD:AD	4E	03	8D	20	D0	8D	21	90
C68C																										


```

CC8C:3E 03 29 10 F0 08 A9 01 28
CC94:8D 6A 42 4C C4 CC CE 6A FD
CC9C:42 D0 25 A9 14 8D 6A 42 B8
CCA4:A0 00 B1 3F C9 A0 0F 7A
CCAC:A9 A0 91 3F A9 01 8D 41 17
CCB4:03 20 1D 94 4C C4 CC A9 7D
CCBC:20 91 3F A9 00 4C B2 CC B0
CCC4:AD 3E 03 29 08 D0 3B EE A0
CCCC:CC 42 AD CC 42 C9 29 D0 3C
CCD4:08 A9 28 8D CC 42 4C 06 C8
CCDC:CD 20 A9 83 A2 01 8E 6A 73
CCE4:42 A2 08 EE 02 D0 D0 0A 37
CCEC:A9 02 8D 10 D0 A9 FE 8D 47
CCF4:F9 07 CA D0 EE A5 3F 18 58
CCFC:69 01 85 3F A5 40 69 00 31
CD04:85 40 AD 3E 03 29 04 D0 A1
CD0C:39 CE CC 42 AD CC 42 D0 AB
CD14:08 A9 01 8D CC 42 4C 46 65
CD1C:CD 20 E7 83 A2 01 8E 6A 7C
CD24:42 A2 08 CE 02 D0 D0 0A 76
CD2C:A9 00 8D 10 D0 A9 FF 8D 0A
CD34:F9 07 CA D0 EE A5 3F 38 B9
CD3C:E9 01 85 3F A5 40 E9 00 B3
CD44:85 40 AD 3E 03 29 01 D0 DB
CD4C:2D CE CD 42 AD CD 42 D0 0A
CD54:08 A9 01 8D CD 42 4C 7A E1
CD5C:CD 20 25 84 A2 01 8E 6A 74
CD64:42 A2 08 CE 03 D0 CA D0 79
CD6C:FA A5 3F 38 E9 28 85 3F 94
CD74:A5 40 E9 00 85 40 AD 3E F6
CD7C:03 29 02 D0 2F EE CD 42 44
CD84:AD CD 42 C9 1A D0 08 A9 1D
CD8C:19 8D CD 42 4C B0 CD 20 D6
CD94:57 84 A2 01 8E 6A 42 A2 A6
CD9C:08 EE 03 D0 CA D0 FA A5 9A
CDA4:3F 18 69 28 85 3F A5 40 4A
CDAC:69 00 85 40 4C 74 CC C9 49
CDB4:91 F0 2B C9 1D F0 3C C9 46
CDBC:11 F0 4D C9 9D F0 5E C9 9A
CDC4:41 F0 03 4C 36 CE EE 28 55
CDDC:D0 28 D0 C9 10 D0 05 83
CDD4:A9 00 8D 28 D0 AD 28 D0 D7
CDDC:8D 27 D0 4C 88 CC 20 81 21
CDE4:CE 20 25 84 20 25 84 20 9B
CDEC:25 84 20 25 84 20 25 84 06
CDF4:4C 89 CB 20 81 CE 20 A9 C5
CDFC:83 20 A9 83 20 A9 83 20 9E
CE04:A9 83 20 A9 83 4C 89 CB 22
CE0C:20 81 CE 20 57 84 20 57 5A
CE14:84 20 57 84 20 57 84 20 B6
CE1C:57 84 4C 89 CB 20 81 CE 59
CE24:20 E7 83 20 E7 83 20 E7 B3
CE2C:83 20 E7 83 20 E7 83 4C BC
CE34:89 CB A9 93 20 D2 F3 20 64
CE3C:81 CE AD 18 D0 09 08 8D CD
CE44:18 D0 AD 11 D0 09 20 8D 61
CE4C:11 D0 A9 00 85 3F A9 04 5C
CE54:85 40 A0 00 AD 4F 03 91 1B
CE5C:3F E6 3F D0 02 E6 40 A5 1A
CE64:40 C9 07 D0 EF A5 3F C9 E0
CE6C:E8 D0 E9 A9 0E 8D F9 07 2C
CE74:A9 1E 8D 15 D0 A9 00 8D 2C
CE7C:45 03 4C 7F CB AD 71 42 39
CE84:85 02 AD 72 42 85 03 AD 1E
CE8C:73 42 8D 49 03 AD 74 42 B4
CE94:8D 4A 03 AD 75 42 8D 4B E1
CE9C:03 AD 76 42 8D 3F 03 AD 37
CEA4:77 42 8D 43 03 60 A9 01 62
CEAC:8D 15 D0 AD 90 42 8D 41 35
CEB4:03 A9 00 8D 45 03 60 20 2E
CEBC:E6 86 A9 1E 8D 78 86 8D 6F
CEC4:15 D0 A9 02 8D 46 03 20 22
CECC:23 86 A5 C6 F0 F4 A9 01 6E
CED4:8D 78 86 8D 15 D0 60 A5 53
CEDC:02 8D 6C 42 A5 03 8D 6D 52
CEE4:42 A5 01 29 FE 85 01 A9 79
CEEC:00 8D 15 D0 A9 00 85 02 F7
CEF4:A9 A0 85 03 A9 20 85 3F 88
CEFC:A9 4E 85 40 20 57 CF A9 5F
CF04:00 85 02 A9 20 85 03 A9 A6
CF0C:00 85 3F A9 A0 85 40 20 4B
CF14:57 CF A9 20 85 02 A9 4E 60
CF1C:85 03 A9 00 85 3F A9 20 11
CF24:85 40 20 57 CF A9 01 8D C4
CF2C:15 D0 AD 6C 42 85 02 AD E0

```

```

CF34:6D 42 85 03 A5 01 09 01 40
CF3C:85 01 AD C2 94 C9 57 F0 2C
CF44:11 A9 02 85 C6 A9 43 8D 60
CF4C:77 02 8D 78 02 A9 57 8D 54
CF54:C2 94 60 A9 20 8D C3 94 74
CF5C:A9 40 8D C4 94 A0 00 B1 B7
CF64:02 91 3F A5 02 18 69 01 EF
CF6C:85 02 A5 03 69 00 85 03 8D
CF74:A5 3F 18 69 01 85 3F A5 92
CF7C:40 69 00 85 40 CE C4 94 4A
CF84:D0 DD CE C3 94 D0 D8 60 14

```

BEFORE TYPING ...

Before typing in programs, please refer to "How To Type In COMPUTE!'s GAZETTE Programs," elsewhere in this issue.

XpressCard 128

See instructions in article on page 70 before typing in.

```

1C01:08 1C FE FF DE 9C 00 19 A6
1C09:1C FF FF 9E 28 D1 28 22 34
1C11:31 43 34 33 22 29 29 00 74
1C19:41 1C FF FF 8F 22 14 14 3A
1C21:14 14 14 14 14 14 14 59
1C29:28 43 29 20 31 39 38 38 84
1C31:20 43 4F 4D 50 55 54 45 CE
1C39:21 20 50 55 42 2E 20 00 74
1C41:00 00 A0 00 A9 01 99 00 12
1C49:10 C8 C0 08 90 F8 A0 00 FD
1C51:84 FC 84 FE B9 0B 22 99 63
1C59:0A 10 C8 C0 08 90 F5 20 4E
1C61:BE 1D 20 AD 24 85 FD A9 4B
1C69:0F 8D 20 D0 8D 21 D0 20 50
1C71:F1 21 AD E8 23 C9 2F F0 BE
1C79:08 A9 2F 8D E8 23 D0 D8 CB
1C81:1E 20 F4 1D A0 00 8C E9 49
1C89:23 20 E4 FF 20 8D 1E F0 5C
1C91:F8 C9 11 D0 18 AD E9 23 56
1C99:18 69 27 90 08 A9 13 20 53
1CA1:D2 FF 4C 85 1C 8D E9 23 33
1CA9:A9 11 4C 1D 1D C9 87 D0 46
1CB1:03 4C 20 1F C9 91 D0 18 C2
1CB9:AD E9 23 38 E9 29 B0 08 88
1CC1:A9 13 20 D2 FF 4C 85 1C 1D
1CC9:8D E9 23 A9 91 4C 1D 1D 57
1CD1:C9 9D D0 09 CE E9 23 CE 34
1CD9:E9 23 4C 1D 1D C9 94 D0 35
1CE1:03 4C 15 21 C9 13 D0 05 A4
1CE9:A0 00 4C 32 1D C9 14 D0 28
1CF1:03 4C 45 21 C9 8D D0 03 A2
1CF9:4C EA 20 C9 93 D0 08 20 C3
1D01:00 22 A9 13 4C E5 1C C9 26
1D09:0D D0 03 4C 8A 1C C9 85 01
1D11:90 0A C9 8D B0 06 20 41 47
1D19:1D 4C 85 1C AC E9 23 C8 83
1D21:C0 FF 90 0D 8D EA 23 A0 9D
1D29:00 A9 13 20 D2 FF AD EA 0F
1D31:23 8C E9 23 20 D2 FF 4C 28
1D39:8A 1C 90 0E 08 93 13 00 67
1D41:C9 85 D0 03 4C 08 24 C9 A0
1D49:89 D0 03 4C F3 23 C9 86 E7
1D51:D0 03 4C 08 24 C9 8A D0 EC
1D59:03 4C B0 1E C9 8B D0 0B 49
1D61:20 A2 24 A9 00 8D ED 23 A8
1D69:4C F4 1D C9 88 D0 27 20 3D
1D71:D8 1D E6 FF A5 FF C9 FE FB
1D79:90 19 AD ED 23 F0 B0 20 E9
1D81:A2 24 A9 00 8D ED 23 4C 02
1D89:94 1D A9 01 8D ED 23 A9 AE
1D91:04 85 FF 4C F4 1D C6 FF 9D
1D99:AD ED 23 F0 E4 A5 FF C9 6A
1DA1:04 B0 17 A9 00 8D ED 23 BC
1DA9:4C B7 1D A5 FF C9 25 B0 18
1DB1:09 A9 01 8D ED 23 A9 FD 21
1DB9:85 FF 4C F4 1D A0 00 A9 A4

```

```

1DC1:D8 85 FD A9 00 85 FC A9 DD
1DC9:0B 91 FC C8 D0 F9 E6 FD 54
1DD1:A5 FD C9 DC 90 F1 60 A0 13
1DD9:00 8C EE 23 AE ED 23 A9 64
1DE1:FE 08 B9 02 B9 02 04 20 4C
1DE9:77 FF AC EE 23 C8 D0 E9 2C
1DF1:4C 0F 1E A0 01 20 F3 21 75
1DF9:A0 00 8C EE 23 AE ED 23 D7
1E01:A9 FE 20 74 FF 99 00 04 87
1E09:AC EE 23 C8 D0 EC 20 7E 41
1E11:24 A9 20 99 FE 04 C8 D0 D1
1E19:FA A5 FF AE ED 23 F0 06 0B
1E21:38 E9 03 4C 2A 1E 38 E9 3D
1E29:24 A2 2F 38 E9 64 E8 90 CC
1E31:03 4C 2C 1E 18 69 64 8E 27
1E39:03 05 A2 2F 38 E9 0A E8 E5
1E41:90 03 4C 3D 1E 18 69 0A 12
1E49:8E 04 05 A2 2F 38 E9 01 C7
1E51:E8 90 03 4C 4E 1E 8E 05 58
1E59:05 AD ED 23 D0 01 60 AD 6C
1E61:05 05 18 69 07 C9 3A 90 5F
1E69:06 EE 04 05 38 E9 0A 8D 40
1E71:05 05 EE 04 05 AD 04 05 7B
1E79:C9 3A 90 09 EE 03 05 38 91
1E81:E9 0A 8D 04 05 EE 03 05 16
1E89:EE 03 05 60 8D EA 23 AC AF
1E91:E9 23 B9 00 04 8D EB 23 14
1E99:A9 64 99 00 04 A9 FF 85 43
1EA1:E7 A9 0B 85 E4 AD EB 23 CE
1EA9:99 00 04 AD EA 23 60 A0 53
1EB1:00 B9 BE 1E F0 13 20 D2 FC
1EB9:FF C8 4C B2 1E 13 43 4C EC
1EC1:45 41 52 20 41 4C 4C 3F 50
1EC9:00 A9 00 20 E4 FF F0 FB 77
1ED1:C9 59 F0 03 4C F8 20 A5 C3
1ED9:FF 85 FD A0 00 84 FC AE FB
1EE1:ED 23 8C EE 23 A9 FC 8D A5
1EE9:BD 02 A9 20 27 FF AC 46
1EF1:EE 23 C8 D0 EA E6 FD A5 29
1EF9:FD C9 FE 90 E2 AD ED 23 5D
1F01:D0 0C A9 01 8D ED 23 A9 04
1F09:04 85 FD 4C E0 1E A9 93 95
1F11:20 D2 FF A9 00 8D ED 23 E3
1F19:20 A2 24 20 F4 1D 60 A9 1D
1F21:02 8D 20 D0 A5 D4 C9 58 41
1F29:F0 F5 C9 01 D0 03 4C 03 D4
1F31:21 C9 21 D0 06 20 BB 1F EA
1F39:4C F8 20 C9 12 D0 06 20 7C
1F41:54 20 4C F8 20 C9 15 D0 ED
1F49:0A A5 D3 D0 03 4C 5F 21 A6
1F51:4C 9A 21 C9 11 D0 03 4C 3B
1F59:DB 20 C9 29 D0 03 4C EF 74
1F61:22 C9 0D D0 06 20 2D 22 FE
1F69:4C F8 20 C9 2A D0 06 20 6D
1F71:25 22 4C F8 20 C9 36 D0 49
1F79:37 A5 D3 D0 0C A9 7B 85 C7
1F81:FF A9 00 8D ED 23 4C F8 90
1F89:20 C9 01 D0 0C A9 F6 85 F1
1F91:FF A9 00 8D ED 23 20 F8 48
1F99:20 C9 02 D0 0C A9 73 85 1B
1FA1:FF A9 01 8D ED 23 4C F8 D0
1FA9:20 A9 CA 85 FF 4C F8 20 57
1FB1:4C 25 1F D2 A0 C2 C9 D8 EC
1FB9:C2 D9 20 8D 1D 20 50 20 8B
1FC1:A9 00 85 FC 85 FA 8D EE 77
1FC9:23 A9 01 8D F0 23 8D F1 1E
1FD1:23 A9 FD 85 FD A9 FC 85 3A
1FD9:FB AE F0 23 AC EE 23 A9 23
1FE1:FA 20 74 FF 8D EF 23 AE 55
1FE9:F1 23 AC EE 23 A9 FC 8D B5
1FF1:B9 02 AD EF 23 20 77 FF CA
1FF9:AC EE 23 C8 8C EE 23 D0 72
2001:D8 C6 FB C6 FD A5 FF C9 9B
2009:FD D0 0B A5 FD C9 03 D0 26
2011:03 4C 4A 20 A5 FF C5 FD E7
2019:90 08 AD F1 23 CD ED 23 C7
2021:F0 27 AD F0 23 F0 12 A5 0F
2029:FB C9 04 B0 0C A9 FD 85 ED
2031:FB A9 00 8D F0 23 4C DA 3A
2039:1F AD F0 23 CD F1 23 F0 32
2041:98 A9 00 8D F1 23 4C D2 98
2049:1F A9 00 8D 30 D0 60 A9 8B
2051:01 D0 F8 20 50 20 A9 00 BD
2059:85 FC 85 FA 8D EE 23 AD 18
2061:ED 23 8D F0 23 8D F1 23 78

```


2069:A0 00 A5 FF 85 FD 18 69 6C	2311:A9 00 8D ED 23 20 F4 1D 5D	C0C8:3D 03 69 00 8D 3D 03 88 C6
2071:01 85 FB C9 FE 90 0E AD B3	2319:20 CC FF A9 00 A0 FF A2 62	C0D0:C0 00 D0 EA 18 AD 3C 03 6E
2079:F0 23 D0 5B A9 04 85 FB 2F	2321:FF 20 BD FF A9 04 AA 7A	C0D8:6D 3F 03 8D 3C 03 8D 0E 31
2081:A9 01 8D F0 23 AE F0 23 70	2329:07 20 BA FF 20 C0 FF A2 F8	C0E0:C1 8D 20 C1 AD 3D 03 69 98
2089:8C EE 23 A9 FA 20 74 FF 0C	2331:04 20 C9 FF A0 00 20 40 40	C0E8:04 8D 3D 03 8D 0F C1 8D 61
2091:8D EF 23 AE F1 23 AC EE 48	2339:23 20 CC FF 4C 03 21 A2 06	C0F0:21 C1 AD 0F C1 69 D4 01 05
2099:23 A9 FC 8D B9 02 AD EF 6F	2341:00 B9 00 04 C9 20 00 05 6B	C0F8:15 C1 8D 19 C1 AD 0E C1 5B
20A1:23 20 77 FF AC EE 23 C8 9A	2349:69 40 4C 5D 23 C9 40 90 05	C100:8D 14 C1 8D 18 C1 AD 4F D2
20A9:D0 DB E6 FB E6 FD A5 FB 5C	2351:0B C9 60 B0 05 69 80 4C C1	C108:03 C9 00 F0 0A 8D FF FF 15
20B1:C0 FE 90 11 AD F0 23 D0 02	2359:5D 23 A9 20 20 D2 FF C8 63	C110:AD 54 03 8D FF FF 60 AD 27
20B9:1E A9 04 85 FB A9 01 8D 62	2361:CC E3 23 F0 0E E8 EC E4 4D	C118:FF FF 29 0F 8D 55 03 AD 27
20C1:F0 23 4C 86 20 A5 FD C9 92	2369:23 D0 D6 A9 0D 20 D2 FF 79	C120:FF FF 60 20 9E E0 38 A5 40
20C9:FE 90 BA A9 04 85 FD A9 7B	2371:4C 40 23 A0 00 A9 0D 20 3D	C128:62 E9 7F 4A 4A 4A 4A 4A 46
20D1:01 8D F1 23 4C 86 20 4C 6F	2379:D2 FF C8 CC E5 23 90 F5 E1	C130:C9 04 90 03 4C 23 C1 60 AE
20D9:4A 20 B9 D0 06 99 00 04 26	2381:20 8E 23 C9 00 F0 05 A0 EA	C138:C9 00 F0 12 C9 01 F0 18 2C
20E1:C8 D0 F7 20 D8 1D 4C 03 92	2389:00 4C 40 23 60 AD F2 23 DF	C140:C9 02 F0 1E AE 3F 03 CA 63
20E9:21 A0 00 B9 00 04 99 D0 92	2391:D0 03 20 D8 1D E6 FF A5 BC	C148:8E 3F 03 4C 69 C1 AC 40 F3
20F1:06 C8 D0 F7 4C 85 1C A5 57	2399:FF C9 FE B0 34 CD E6 23 07	C150:03 88 8C 40 03 4C 69 C1 EA
20F9:FF C9 FE 90 02 C6 FF 20 E0	23A1:90 18 F0 16 AD ED 23 CD EE	C158:AE 3F 03 E8 8E 3F 03 4C B5
2101:F4 1D A9 0F 8D 20 D0 8D 47	23A9:E7 23 D0 0E 20 A2 24 A9 25	C160:69 C1 AC 40 03 C8 8C 40 37
2109:21 D0 A9 00 85 D0 20 4A 3F	23B1:00 8D ED 23 20 F9 1D A9 18	C168:03 60 C9 00 F0 12 C9 01 23
2111:20 4C 85 1C A0 FF 88 B9 B8	23B9:00 60 AD F2 23 F0 06 20 06	C170:F0 18 C9 02 F0 1E AE 3F 68
2119:D0 06 C8 99 D0 06 88 D0 78	23C1:F9 1D 4C CF 23 A5 90 29 CC	C178:03 E8 8E 3F 03 4C 9B C1 BF
2121:F5 AD FD 04 8D D0 06 A0 26	23C9:40 F0 03 4C AD 23 A9 01 DF	C180:AC 40 03 C8 8C 40 03 4C 0F
2129:FD 88 B9 00 04 C8 99 00 3A	23D1:60 AD ED 23 D0 D6 A9 01 D9	C188:9B C1 AE 3F 03 CA 8E 3F B3
2131:04 88 CC E9 23 D0 F2 A9 BB	23D9:8D ED 23 A9 04 85 FF 4C E3	C190:03 4C 9B C1 AC 40 03 88 2D
2139:20 99 00 04 88 C0 FE B0 28	23E1:BB 23 00 00 00 00 00 2F FD	C198:8C 40 03 60 20 BF C1 C9 26
2141:F8 4C 8A 1C AC E9 23 C8 42	23E9:01 00 20 00 00 FF 00 00 B4	C1A0:27 90 03 4C 9C C1 C9 04 84
2149:B9 00 04 88 99 00 04 C8 0F	23F1:00 00 20 7E 24 A0 00 B9 81	C1A8:90 F2 8D 3F 03 20 BF C1 B0
2151:C0 FD D0 F3 A9 20 8D FD B3	23F9:D0 06 8D 7C 24 8C 7B 24 12	C1B0:C9 18 90 03 4C AD C1 C9 C7
2159:04 A9 9D 4C D1 1C 20 50 10	2401:20 3F 24 C8 D0 F1 60 C9 13	C1B8:02 90 F2 8D 40 03 60 20 87
2161:20 A2 FE E6 FF 20 F4 1D 32	2409:86 F0 06 EE 7D 24 AD 15 AA	C1C0:9E E0 38 A5 62 E9 7F 4A 31
2169:BD D0 06 C9 20 D0 22 CA 6F	2411:24 CE 7D 24 AD 7D 24 C9 86	C1C8:4A 0A 18 69 01 60 AD 3F B1
2171:30 03 4C 69 21 4C 03 21 0E	2419:41 90 08 A9 3F 8D 7D 24 11	C1D0:03 C9 03 90 12 C9 26 B0 66
2179:E6 FF A5 FF C9 FE 90 E5 35	2421:4C 2D 24 C9 40 90 05 A9 F3	C1D8:0E AD 40 03 C9 01 90 07 81
2181:AD ED 23 D0 F0 A9 01 8D 45	2429:00 8D 7D 24 20 7E 24 A0 AA	C1E0:C9 18 B0 03 A9 00 60 A9 4D
2189:ED 23 A9 04 85 FF 4C 66 2C	2431:00 8C 7B 24 20 51 24 99 76	C1E8:01 60 A9 0B 8D 11 D0 20 5D
2191:21 DD 00 04 D0 E2 4C 70 37	2439:D0 06 C8 D0 F4 60 20 58 53	C1F0:5B C0 A9 20 8D 2B 04 AD 58
2199:21 20 50 20 A2 00 BD D0 E1	2441:24 AD 7C 24 8D 01 D6 60 57	C1F8:74 03 8D 54 03 A9 03 8D C0
21A1:06 C9 20 F0 03 E8 D0 F6 C0	2449:AD 00 D6 29 80 F0 F9 60 F1	C200:41 03 A9 01 8D 42 03 A9 51
21A9:8E EA 23 E6 FF A5 FF C9 21	2451:20 58 24 AD 01 D6 60 A9 EC	C208:00 8D 52 03 8D 53 03 AD D8
21B1:FE 90 14 AD ED 23 D0 C0 9E	2459:12 20 74 24 AD 7D 24 8D BC	C210:41 03 8D 3F 03 AD 42 03 F2
21B9:A9 01 8D ED 23 A9 04 85 EE	2461:01 D6 A9 13 20 74 24 AD 0F	C218:8D 40 03 A9 00 8D 4F 03 47
21C1:FF 4C C8 21 4C F8 20 20 E8	2469:7B 24 8D 01 D6 A9 1F 20 F5	C220:20 AF C0 C9 20 D0 36 20 27
21C9:F4 1D A2 00 A0 00 B9 00 9A	2471:74 24 60 8D 00 D6 20 49 C6	C228:23 C1 8D 51 03 20 38 C1 41
21D1:04 8D EC 23 BD D0 06 CD 54	2479:24 60 FF 00 02 A9 30 8D 90	C230:20 38 C1 20 CE C1 C9 01 20
21D9:EC 23 F0 08 A2 00 C8 D0 71	2481:A8 06 8D A9 06 AD 7D 24 F1	C238:F0 23 20 AF C0 C9 20 F0 5C
21E1:ED 4C AC 21 E8 EC EA 23 C9	2489:38 E9 0A 90 06 EE A8 06 F5	C240:1C A9 20 8D 4F 03 20 AF 91
21E9:F0 DA C8 F0 DE 4C CF 21 6B	2491:4C 89 24 69 0A 38 E9 01 83	C248:C0 AD 51 03 20 6A C1 20 42
21F1:A0 00 B9 3B 1D D0 01 60 FD	2499:90 06 EE A9 06 4C 96 24 D6	C250:AF C0 AE 52 03 E8 8E 52 04
21F9:20 D2 FF C9 4C F3 21 A0 A2	24A1:60 A9 25 85 FF 60 00 00 03	C258:03 E0 D7 F0 25 AC 42 03 05
2201:00 A9 20 99 00 04 C8 D0 BF		C260:AE 41 03 E8 E8 E0 27 F0 86
2209:FA 60 85 89 86 8A 87 8B 25		C268:09 8E 41 03 8C 42 03 4C 2E
2211:88 8C 13 4E 41 4D 45 3A 08		C270:0F C2 A2 03 C8 C8 C0 19 B6
2219:20 1B 51 00 2C 50 2C 57 B0		C278:F0 03 4C 69 C2 A0 01 4C 3E
2221:2C 50 2C 52 A9 00 8D F2 95		C280:69 C2 AD 60 03 C9 01 F0 59
2229:23 4C 32 22 A9 01 8D F2 D9		C288:13 AD 63 03 8D 54 03 A9 0D
2231:23 A5 FF 8D B6 23 20 A2 EF		C290:3E 8D CB C2 A9 3C 8D 7F 8F
2239:24 AD ED 23 8D E7 23 A9 E6		C298:C2 4C AB C2 A9 05 8D 54 05
2241:00 8D ED 23 85 D0 AA A8 46		C2A0:03 A9 BE 8D CB C2 A9 BC 3C
2249:BD 13 22 F0 07 20 D2 FF E2		C2A8:8D F7 C2 20 9C C1 AC 40 D2
2251:E8 4C 49 22 20 CF FF C9 72		C2B0:03 8C 5D 03 8C D5 03 A2 1B
2259:0D F0 0B 99 E9 07 C8 C0 19		C2B8:02 8E 3F 03 8E 5B 03 8E 71
2261:11 B0 03 4C 55 22 C0 02 36		C2C0:C1 03 20 AF C0 A2 01 8E 08
2269:B0 01 60 A9 14 20 D2 FF B3		C2C8:3F 03 A9 BE 8D 4F 03 20 9F
2271:A2 00 C8 AD F2 23 F0 06 07		C2D0:AF C0 20 9C C1 AC 40 03 70
2279:BD 1D 22 4C 82 22 BD 21 26		C2D8:8C 5C 03 8C D4 03 A2 26 03
2281:22 99 E9 07 20 D2 FF E8 20		C2E0:8E 3F 03 8E 5A 03 A9 20 19
2289:E0 05 90 E6 8C E8 07 20 36		C2E8:8E C0 03 8D 4F 03 20 AF 95
2291:F9 1D AD E8 07 A2 E9 A0 95		C2F0:C0 A2 27 8E 3F 03 A9 BC 63
2299:07 20 BD FF A9 08 A2 08 DB		C2F8:8D 4F 03 20 AF C0 A9 01 50
22A1:AC F2 23 20 BA FF 20 C0 36		C300:8D 2B D8 A9 1B 8D 11 D0 D0
22A9:FF A2 08 AD F2 23 F0 06 7E		C308:AD 74 03 8D 2B D8 60 AE E8
22B1:20 C9 FF 4C BA 22 20 C6 A2		C310:57 03 BD C0 03 8D 3F 03 97
22B9:FF A0 00 8C EE 23 AD F2 41		C318:BD D4 03 8D 40 03 AD 50 A6
22C1:23 F0 09 B9 00 04 20 D2 B3		C320:03 20 38 C1 A9 00 8D 4F 0C
22C9:FF 4C D6 22 20 CF FF AC 0B		C328:03 20 AF C0 8D 3C 03 AD 4C
22D1:EE 23 99 00 04 AC EE 23 5D		C330:55 03 C9 05 F0 11 AD 3C 10
22D9:C8 D0 E0 20 8E 23 C9 00 69		C338:03 C9 20 F0 07 C9 A0 F0 58
22E1:F0 03 4C BC 22 A9 08 20 9C		C340:03 4C 27 C3 A9 00 60 A9 39
22E9:C3 FF 20 CC FF 60 A9 00 B5		C348:01 60 7E FE 7D FD 77 F7 F2
22F1:8D E3 23 A9 01 8D F2 23 3C		C350:7B FB A2 00 BD 00 DC 8D 1E
22F9:A9 28 8D EA 23 A9 01 8D 6C		C358:58 03 A0 04 BD 4A C3 CD 8D
2301:E5 23 A5 FF 8D E6 23 20 26		C360:58 03 D0 02 A0 00 BD 4C DB
2309:A2 24 AD ED 23 8D E7 23 80		C368:C3 CD 58 03 D0 02 A0 02 52

Human Rat Race

See instructions in article on page 46 before typing in.

C000:A9 EA 8D 28 03 A5 A2 85 BE	C008:8C A9 00 AA 9D 3C 03 E8 B1	C000:C1 03 20 AF C0 A2 01 8E 08
C008:8C A9 00 AA 9D 3C 03 E8 B1	C010:E0 C0 D0 F8 A9 02 8D E8 35	C008:C1 03 20 AF C0 A2 01 8E 08
C010:E0 C0 D0 F8 A9 02 8D E8 35	C018:03 A9 06 8D E9 03 A9 75 43	C008:C1 03 20 AF C0 A2 01 8E 08
C018:03 A9 06 8D E9 03 A9 75 43	C020:8D 71 03 A9 7B 8D 72 03 B9	C008:C1 03 20 AF C0 A2 01 8E 08
C020:8D 71 03 A9 7B 8D 72 03 B9	C028:4C C0 C5 20 E4 FF C9 85 FA	C008:C1 03 20 AF C0 A2 01 8E 08
C028:4C C0 C5 20 E4 FF C9 85 FA	C030:D0 03 4C 29 C9 20 52 C3 2E	C008:C1 03 20 AF C0 A2 01 8E 08
C030:D0 03 4C 29 C9 20 52 C3 2E	C038:20 90 C4 20 4C C4 AD 61 BA	C008:C1 03 20 AF C0 A2 01 8E 08
C038:20 90 C4 20 4C C4 AD 61 BA	C040:03 C9 00 D0 10 20 E2 C9 53	C008:C1 03 20 AF C0 A2 01 8E 08
C040:03 C9 00 D0 10 20 E2 C9 53	C048:20 5D CA AD 73 03 C9 00 A0	C008:C1 03 20 AF C0 A2 01 8E 08
C048:20 5D CA AD 73 03 C9 00 A0	C050:F0 03 4C F3 CA 20 3B CA E5	C008:C1 03 20 AF C0 A2 01 8E 08
C050:F0 03 4C F3 CA 20 3B CA E5	C058:4C 94 C8 A9 00 8D 3C 03 8A	C008:C1 03 20 AF C0 A2 01 8E 08
C058:4C 94 C8 A9 00 8D 3C 03 8A	C060:A9 04 8D 3D 03 AD 3C 03 87	C008:C1 03 20 AF C0 A2 01 8E 08
C060:A9 04 8D 3D 03 AD 3C 03 87	C068:8D 74 C0 AD 3D 03 8D 75 47	C008:C1 03 20 AF C0 A2 01 8E 08
C068:8D 74 C0 AD 3D 03 8D 75 47	C070:C0 A9 A0 8D FF FF AD 74 79	C008:C1 03 20 AF C0 A2 01 8E 08
C070:C0 A9 A0 8D FF FF AD 74 79	C078:C0 8D 88 C0 18 AD 75 C0 FD	C008:C1 03 20 AF C0 A2 01 8E 08
C078:C0 8D 88 C0 18 AD 75 C0 FD	C080:69 D4 8D 89 C0 A9 05 8D 7A	C008:C1 03 20 AF C0 A2 01 8E 08
C080:69 D4 8D 89 C0 A9 05 8D 7A	C088:FF FF 18 AD 3C 03 69 01 A9	C008:C1 03 20 AF C0 A2 01 8E 08
C088:FF FF 18 AD 3C 03 69 01 A9	C090:8D 3C 03 AD 3D 03 69 00 EB	C008:C1 03 20 AF C0 A2 01 8E 08
C090:8D 3C 03 AD 3D 03 69 00 EB	C098:8D 3D 03 38 AD 3C 03 E9 62	C008:C1 03 20 AF C0 A2 01 8E 08
C098:8D 3D 03 38 AD 3C 03 E9 62	C0A0:E8 8D 3E 03 AD 3D 03 E9 44	C008:C1 03 20 AF C0 A2 01 8E 08
C0A0:E8 8D 3E 03 AD 3D 03 E9 44	C0A8:07 0D 3E 03 D0 B7 60 A9 B8	C008:C1 03 20 AF C0 A2 01 8E 08
C0A8:07 0D 3E 03 D0 B7 60 A9 B8	C0B0:00 8D 3C 03 8D 3D 03 AC 61	C008:C1 03 20 AF C0 A2 01 8E 08
C0B0:00 8D 3C 03 8D 3D 03 AC 61	C0B8:40 03 C0 00 F0 16 18 AD F0	C008:C1 03 20 AF C0 A2 01 8E 08
C0B8:40 03 C0 00 F0 16 18 AD F0	C0C0:3C 03 69 28 8D 3C 03 AD E1	C008:C1 03 20 AF C0 A2 01 8E 08

C370:BD 4E C3 CD 58 03 D0 02 32	C618:A9 11 20 DB C4 A9 05 20 77	C8C0:02 D0 DF 4C E4 C8 52 45 7C
C378:A0 01 BD 50 C3 CD 58 03 56	C620:9F C6 A9 14 20 DB C4 A9 49	C8C8:44 20 57 49 4E 53 21 1D 23
C380:D0 02 A0 03 8E 57 03 C0 CD	C628:07 20 9F C6 A9 0F 8D 5F A5	C8D0:42 4C 55 45 20 57 49 4E D4
C388:04 D0 03 4C 9E C3 8C 50 D8	C630:03 20 B7 C6 20 D7 C6 20 B8	C8D8:53 21 49 54 27 53 20 41 D2
C390:03 20 0F C3 C9 01 F0 06 F9	C638:F9 C6 20 20 C7 20 E4 FF 03	C8E0:20 54 49 45 AE 62 03 E0 FA
C398:20 B5 C3 20 69 C9 20 4C 17	C640:C9 85 F0 12 C9 86 F0 14 B1	C8E8:00 D0 03 4C 2B C0 20 83 F3
C3A0:C4 AE 57 03 E8 E0 02 F0 11	C648:C9 87 F0 16 C9 88 D0 ED 1C	C8F0:CB AE 62 03 E0 02 F0 09 8A
C3A8:03 4C 54 C3 60 E2 E1 62 40	C650:4C A0 C7 4C 3D C6 20 B7 E6	C8F8:E0 A0 F0 0A AC 14 4C 08 B0
C3B0:61 62 61 E2 E1 AE 57 03 57	C658:C6 4C 3D C6 20 D7 C6 4C AA	C900:C9 04 00 4C 08 C9 A0 0A 18
C3B8:BD C0 03 8D 3F 03 BD D4 DE	C660:3D C6 20 F9 C6 4C 3D C6 8A	C908:A9 13 20 D2 FF A9 10 85 B2
C3C0:03 8D 40 03 BD E8 03 8D 8A	C668:12 20 20 20 11 9D 9D 2B	C910:D3 A9 12 20 D2 FF A9 00 26
C3C8:54 03 8D 59 03 AE 50 03 F8	C670:9D 9D 92 A2 00 A0 00 B9 EC	C918:8D 86 02 A2 00 B9 C6 8B BB
C3D0:BD AD C3 8D 4F 03 20 AF 6A	C678:68 C6 20 D2 FF C8 C0 0B CC	C920:20 D2 FF C8 E8 E0 0A D0 B4
C3D8:C0 AD 50 03 20 38 C1 AE 7A	C680:D0 F5 E8 E0 04 D0 EE 60 C0	C928:F4 AD 6C 03 20 D2 FF 20 CB
C3E0:57 03 AD 3F 03 9D C0 03 91	C688:05 D5 C3 C3 C9 11 9D 9D 2E	C930:1B CB A9 18 20 DB C4 AD A2
C3E8:AD 40 03 9D D4 03 4C 5D 3A	C690:9D 9D C2 46 30 C2 11 9D 5D	C938:63 03 8D 86 02 A2 00 A9 9C
C3F0:CB A9 00 8D 4F 03 20 AF 18	C698:9D 9D 9D CA C3 C3 CB 18 99	C940:0C 85 D3 BD 58 C9 20 D2 8E
C3F8:C0 AE 57 03 AD 55 03 9D 0E	C6A0:69 30 8D 94 C6 A9 07 85 5A	C948:FF E8 E0 11 D0 F5 20 E4 C6
C400:98 03 AE 50 03 BD B1 C3 A7	C6A8:D3 A2 00 BD 88 C6 20 D2 17	C950:FF C9 85 D0 F9 4C 00 C0 D5
C408:8D 4F 03 20 AF C0 20 3B 8A	C6B0:FF E8 E0 17 D0 F5 60 A9 CE	C958:50 52 45 53 53 20 46 31 5F
C410:C4 AD 50 03 20 6A C1 AE 7E	C6B8:0C 20 DB C4 AD 61 03 C9 DE	C960:20 46 4F 52 20 4D 45 4E B3
C418:57 03 BD 84 03 8D 54 03 08	C6C0:01 F0 09 20 8C C7 A9 01 06	C968:55 AD 61 03 C9 01 D0 01 63
C420:AD 64 03 8D 4F 03 20 AF 49	C6C8:8D 61 03 60 A9 17 20 8C 52	C970:60 AD 55 03 C9 07 F0 01 C7
C428:C0 AE 57 03 BD 98 03 9D CC	C6D0:C7 A9 00 8D 61 03 60 A9 07	C978:60 AD 6C 03 20 D2 FF AD 5F
C430:84 03 A9 01 8D 84 03 8D 14	C6D8:0F 20 DB C4 AD 60 03 C9 7C	C980:63 03 8D 86 02 AD 57 03 19
C438:85 03 60 A0 00 A2 00 E8 CE	C6E0:01 F0 0B A9 2E 20 8C C7 F9	C988:49 01 AA 18 BD 67 03 69 D2
C440:EC 83 03 D0 FA C8 CC 6B 8E	C6E8:A9 01 8D 60 03 60 A9 3D 6D	C990:01 9D 67 03 BD 69 03 69 C2
C448:03 D0 F2 60 AE 57 03 BD 82	C6F0:20 8C C7 A9 00 8D 60 03 3F	C998:00 9D 69 03 18 AD 65 03 36
C450:C0 03 8D 3F 03 BD D4 03 5C	C6F8:60 A9 12 20 DB C4 AC 5F 10	C9A0:E9 01 8D 65 03 AD 66 03 10
C458:8D 40 03 BD E8 03 8D 54 B7	C700:03 C8 C0 10 D0 02 A0 00 2C	C9A8:E9 00 8D 66 03 A9 13 20 4E
C460:03 A9 A0 8D 4F 03 20 AF 39	C708:A9 0B 85 D3 8C 5F 03 A9 AE	C9B0:D2 FF 18 8A 0A 0A 0A 0A EF
C468:C0 60 AD 56 03 C9 02 D0 99	C710:00 20 91 B3 20 DD BD 20 29	C9B8:0A 69 02 85 D3 BD 69 03 AF
C470:01 60 A2 02 8E 3C 03 20 92	C718:1E AB A2 4C 20 91 C7 60 F1	C9C0:BC 67 03 20 91 B3 20 DD 68
C478:9C C1 AE 3C 03 AD 3F 03 AA	C720:A9 15 20 DB C4 A9 56 20 25	C9C8:BD 20 1E AB A9 05 8D 86 C4
C480:9D C0 03 AD 40 03 9D D4 62	C728:8C C7 60 52 41 43 45 20 E2	C9D0:02 A9 20 20 D2 FF A9 20 DF
C488:03 E8 EC 56 03 D0 E5 60 58	C730:54 4F 20 54 48 45 20 4F ED	C9D8:20 D2 FF AD 63 03 8D 86 D4
C490:AD 56 03 C9 02 D0 01 60 39	C738:54 48 45 52 20 53 49 44 F6	C9E0:02 60 A5 A2 C9 3C B0 01 0E
C498:A2 02 8E 57 03 20 42 C8 21	C740:45 00 47 52 41 42 20 54 28	C9E8:60 A9 00 85 A2 AD 6C 03 17
C4A0:BD AC 03 8D 50 03 20 9E DA	C748:48 45 20 47 4F 4C 44 20 1A	C9F0:20 D2 FF AD 63 03 C9 01 DF
C4A8:E0 A5 62 C9 C8 90 06 20 A9	C750:20 20 20 20 20 20 20 DF	C9F8:D0 02 A9 05 8D 86 02 A9 2F
C4B0:23 C1 8D 50 03 20 0F C3 6D	C758:00 56 49 53 49 42 4C 45 0D	CA00:00 20 DB C4 A9 13 85 D3 DD
C4B8:C9 00 F0 03 4C AF C4 20 40	C760:20 4D 41 5A 45 20 20 00 0C	CA08:AC 6D 03 88 8C 6D 03 C0 19
C4C0:B5 C3 20 4C AE 57 03 71	C768:49 4E 56 49 53 49 42 4C 20	CA10:FF D0 06 A9 01 8D 73 03 5D
C4C8:AD 50 03 9D AC 03 20 42 6B	C770:45 20 4D 41 5A 45 20 20 70	CA18:60 A9 00 20 91 B3 20 DD C3
C4D0:C8 E8 EC 56 03 F0 03 4C 2A	C778:44 52 4F 4E 45 53 20 20 65	CA20:BD 20 1E AB A9 20 20 D2 FB
C4D8:9A C4 60 AA A9 13 20 D2 44	C780:00 53 54 41 52 54 20 47 EE	CA28:FF A9 18 20 DB C4 A9 13 85
C4E0:FF CA E0 FF F0 08 A9 11 45	C788:41 4D 45 00 AA A9 0C 85 4E	CA30:85 D3 A9 24 20 D2 FF 38 79
C4E8:20 D2 FF 4C E1 C4 60 93 72	C790:D3 BD 2B C7 A9 00 F0 07 92	CA38:AD 6E 03 E9 05 8D 6E 03 7D
C4F0:05 11 0D 07 A2 A2 BB BB 26	C798:20 D2 FF E8 4C 91 C7 60 14	CA40:AD 6F 03 E9 00 8D 6F 03 9F
C4F8:20 BB A2 A2 BB 20 20 BB 5A	C7A0:A9 12 8D 6C 03 A9 20 8D 8E	CA48:AC 6E 03 20 91 B3 20 DD AB
C500:20 BB BB 20 BB A2 A2 BB 6D	C7A8:64 03 A9 05 8D 20 D0 AD EC	CA50:BD 18 69 01 20 1E AB A9 82
C508:A2 A2 BB BB 20 BB 0D 07 D1	C7B0:61 03 C9 01 F0 12 20 27 32	CA58:20 20 D2 FF 60 A2 00 8E 7C
C510:20 A1 20 12 BC 92 A2 A1 50	C7B8:C8 A9 A0 8D 64 03 A9 C8 4F	CA60:57 03 8A A9 01 AA BD C0 37
C518:12 BC 92 BB 20 20 20 12 BD	C7C0:8D 83 03 A9 07 4C CF C7 C3	CA68:03 DD 5A 03 D0 66 BD D4 E2
C520:BC 92 A2 A1 A1 20 A1 A1 8F	C7C8:A9 00 8D 83 03 A9 01 8D 65	CA70:03 DD 5C 03 D0 5E A9 18 26
C528:A1 A1 12 BC 92 A2 A1 12 6F	C7D0:63 03 8D 21 D0 8D 74 03 3F	CA78:20 DB C4 AE 57 03 E0 01 22
C530:AC 92 BB A1 0D 07 20 A1 AE	C7D8:A2 00 9D 84 03 E8 E0 12 45	CA80:F0 05 A9 03 4C 89 CA A9 FC
C538:20 A1 20 A1 12 BC 92 A2 A5	C7E0:D0 F8 AE 5F 03 E8 E8 8E FE	CA88:1F 85 D3 A9 24 20 D2 FF 6B
C540:BB 20 20 A1 20 A1 12 BC 38	C7E8:56 03 AD 60 03 C9 01 F0 52	CA90:BC 67 03 BD 69 03 20 91 C3
C548:92 A2 A1 A1 BE A1 A1 20 F3	C7F0:12 A9 05 8D 21 D0 A9 20 2D	CA98:B3 20 CA BB AD 6F 03 AC 03
C550:A1 A1 BC A1 0D 09 A2 A2 3B	C7F8:8D 64 03 A9 92 8D 6C 03 0A	CAA0:6E 03 20 91 B3 A9 57 A0 DE
C558:BB A2 A2 BB A2 A2 BB 20 B1	C800:4C 08 C8 A9 05 8D 63 03 95	CAA8:00 20 28 BA AE 57 03 BD 8D
C560:20 A2 A2 BB A2 A2 BB A2 6E	C808:20 EA C1 20 6A C4 AD 5F BF	CAB0:71 03 A0 03 20 67 B8 20 34
C568:A2 BB A2 A2 BB 0D 09 12 E8	C810:03 0A 8D 3C 03 38 A9 0F 76	CAB8:CA BB 20 DD CA 20 DD BD D4
C570:BC 92 A2 A1 12 BC 92 A2 B8	C818:ED 3C 03 C9 10 90 02 A9 1D	CAC0:18 69 01 20 1E AB AE 57 33
C578:A1 A0 A1 A0 A0 A0 12 BC A3	C820:01 8D 6B 03 4C 2B C0 A9 6D	CAC8:03 A9 00 9D 67 03 9D 69 10
C580:92 A2 A1 12 BC 92 A2 A1 6A	C828:3D 8D 6D 03 A9 F9 8D 6E 58	CAD0:03 20 AD C9 AE 57 03 E8 04
C588:A1 20 20 12 BC 92 BB 0D C6	C830:03 A9 01 8D 6F 03 20 E9 58	CAD8:E0 02 D0 83 60 AE 57 03 21
C590:09 A1 BF 20 A1 20 A1 20 F3	C838:C9 20 AD C9 A9 05 8D 86 0C	CAE0:BD 71 03 8D EB CA A2 00 BA
C598:A1 20 20 20 A1 BF 20 A1 F0	C840:02 60 A0 00 8C 51 03 BD 6C	CAE8:B5 57 9D 75 03 E8 E0 06 BD
C5A0:20 A1 12 BC 92 A2 BB 12 5B	C848:C0 03 D9 C0 03 D0 3C BD D3	CAF0:D0 F6 60 A9 7B A0 03 20 D7
C5A8:BC 92 A2 BB 0D 0D 98 11 26	C850:D4 03 D9 D4 03 D0 34 B9 13	CAF8:A2 BB A9 75 A0 03 20 5B 08
C5B0:20 43 4F 4D 50 55 54 45 A1	C858:5A 03 99 C0 03 B9 5C 03 D1	CB00:BC C9 00 F0 0C C9 01 F0 F1
C5B8:21 20 31 39 38 38 20 00 79	C860:99 D4 03 98 49 01 A8 A9 27	CB08:0D A9 04 8D 62 03 4C E4 86
C5C0:A9 00 BD 20 D0 8D 21 D0 A4	C868:00 99 67 03 99 69 03 8D 83	CB10:C8 A9 06 4C 0B CB A9 02 D8
C5C8:A2 FF E8 BD EF C4 20 D2 44	C870:04 D4 A9 0F 8D 18 D4 A9 7F	CB18:4C 0B CB A2 01 A0 00 AD 74
C5D0:FF C9 00 F0 0D C9 0D 00 58	C878:09 8D 05 D4 A9 0F 8D 06 8A	CB20:60 03 C9 01 F0 36 C8 E8 CC
C5D8:F1 E8 BD EF C4 85 D3 4C 7E	C880:D4 A9 28 8D 01 D4 A9 81 F4	CB28:8E 3F 03 8C 40 03 A9 00 61
C5E0:CA C5 A9 03 20 DB C4 A9 4C	C888:8D D4 D4 AC 51 03 C8 C0 30	CB30:8D 4F 03 20 AF C0 C9 20 F8
C5E8:06 8D 86 02 A9 02 85 D3 FF	C890:02 D0 B1 60 AD 61 03 C9 56	CB38:D0 12 AD 55 03 C9 05 F0 02
C5F0:20 73 C6 A9 03 20 DB C4 F1	C898:01 F0 03 4C 2B C0 A2 00 AD	CB40:0B 8D 54 03 A9 A0 8D 4F B5
C5F8:A9 02 8D 86 02 A9 22 85 74	C8A0:A0 01 BD C0 03 D9 5A 03 BD	CB48:03 20 AF C0 AE 3F 03 AC 90
C600:D3 20 73 C6 A9 0B 20 DB EF	C8A8:D0 13 BD D4 03 D9 5C 03 A7	CB50:40 03 E0 26 D0 D1 A2 01 5B
C608:C4 A9 01 20 9F C6 A9 0E FD	C8B0:D0 0B 18 8A 69 01 0A 6D E9	CB58:C0 17 D0 CA 60 A2 00 AD 18
C610:20 DB C4 A9 03 20 9F C6 76	C8B8:62 03 8D 62 03 E8 88 E0 C1	CB60:3F 03 DD C0 03 D0 13 AD 4F


```

CB68:40 03 DD D4 03 D0 0B EC 48
CB70:57 03 F0 06 BD 84 03 4C 45
CB78:FF C3 E8 EC 56 03 D0 DF 2D
CB80:4C F1 C3 A2 00 8E 51 03 3D
CB88:A9 00 8D 04 D4 A9 1E 8D FD
CB90:01 D4 A9 0F 8D 18 D4 A9 24
CB98:09 8D 05 D4 A9 0F 8D 06 B3
CBA0:D4 A9 11 8D 04 D4 A9 64 30
CBA8:8D 6B 03 A9 00 8D 83 03 1D
CBB0:20 3B C4 AE 51 03 E8 E0 F3
CBB8:04 D0 CA 60 00 00 00 00 E5

```

BEFORE TYPING . . .

Before typing in programs, please refer to "How To Type In COMPUTE!'s GAZETTE Programs," elsewhere in this issue.

Power BASIC: Color Lister

Article on page 61.

Program 1: Color Lister—64 Version

```

HE 10 REM COPYRIGHT 1988 COMPU
TEI PUBLICATIONS, INC. -
ALL RIGHTS RESERVED
RH 20 PRINT"[CLR]{3 SPACES}COP
YRIGHT 1988 COMPUTE! PUB
., INC."
RD 30 PRINTTAB(10)"ALL RIGHTS
{SPACE}RESERVED"
BD 40 FORI=828TO916:READA:POKE
I,A:X=X+A:NEXT
JH 50 IFX<>11017THENPRINT"
{DOWN}ERROR IN DATA STAT
EMENTS.":STOP
RF 60 DATA 169,75,141,6,3,169,
3,141,7,3
XP 70 DATA 169,0,133,251,96,8,
133,252,132,253
KR 80 DATA 134,254,173,141,2,2
08,251,165,251,208
BS 90 DATA 12,165,252,201,143,
208,42,169,1,133
CK 100 DATA 251,208,36,165,252
,201,49,144,26,201
FB 110 DATA 57,144,14,201,65,1
44,18,201,73,176
KM 120 DATA 14,41,15,105,7,208
,5,56,41,15
SG 130 DATA 233,1,141,134,2,16
9,0,133,251,166
HS 140 DATA 254,164,253,165,25
2,40,76,26,167

```

Program 2: Color Lister—128 Version

```

HE 10 REM COPYRIGHT 1988 COMPU
TEI PUBLICATIONS, INC. -
ALL RIGHTS RESERVED
AH 20 BANK15:PRINT"[CLR]
{3 SPACES}COPYRIGHT 1988
COMPUTE! PUB., INC."
RD 30 PRINTTAB(10)"ALL RIGHTS
{SPACE}RESERVED"
EC 40 FORI=2816TO2902:READA:PO
KEI,A:X=X+A:NEXT
QQ 50 IFX<>11087THENPRINT"
{DOWN}ERROR IN DATA STAT
EMENTS.":STOP
JB 60 DATA 169,15,141,6,3,169,

```

```

11,141,7,3
XP 70 DATA 169,0,133,251,96,8,
133,252,132,253
EP 80 DATA 134,254,165,211,208
,252,165,251,208,12
FS 90 DATA 165,252,201,143,208
,41,169,1,133,251
CQ 100 DATA 208,35,165,252,201
,49,144,25,201,57
JE 110 DATA 144,14,201,65,144,
17,201,73,176,13
AR 120 DATA 41,15,105,7,208,5,
56,41,15,233
AM 130 DATA 1,133,241,169,0,13
3,251,166,254,164
DJ 140 DATA 253,165,252,40,76,
81,81

```

Program 3: Color Lister—Plus/4 And 16 Version

```

HE 10 REM COPYRIGHT 1988 COMPU
TEI PUBLICATIONS, INC. -
ALL RIGHTS RESERVED
RH 20 PRINT"[CLR]{3 SPACES}COP
YRIGHT 1988 COMPUTE! PUB
., INC."
RD 30 PRINTTAB(10)"ALL RIGHTS
{SPACE}RESERVED"
PH 40 FORI=819TO911:READA:POKE
I,A:X=X+A:NEXT
PH 50 IFX<>10216THENPRINT"
{DOWN}ERROR IN DATA STAT
EMENTS.":STOP
SF 60 DATA 169,66,141,6,3,169,
3,141,7,3
JP 70 DATA 169,0,133,159,96,8,
133,160,132,161
DE 80 DATA 134,162,173,67,5,20
8,251,165,159,208
EA 90 DATA 12,165,160,201,143,
208,46,169,1,133
AK 100 DATA 159,208,40,165,160
,201,49,144,30,201
SJ 110 DATA 57,144,14,201,65,1
44,22,201,73,176
RQ 120 DATA 18,41,15,105,7,208
,5,56,41,15
AC 130 DATA 233,1,170,189,19,1
,141,59,5,169
FF 140 DATA 0,133,159,166,162,
164,161,165,160,40
CG 150 DATA 76,110,139

```

Dumpmaker

Article on page 65.

```

HE 10 REM COPYRIGHT 1988 COMPU
TEI PUBLICATIONS, INC. -
ALL RIGHTS RESERVED
AQ 20 PRINT"[CLR]{3 SPACES}COP
YRIGHT 1988 COMPUTE! PUB
., INC."
CA 30 PRINTTAB(11)"ALL RIGHTS
{SPACE}RESERVED"
GX 40 PRINTTAB(7)"[2 DOWN]C16/
+4 SCREEN DUMP CREATOR":
GRAPHICCLR:DIMM(47)
GQ 50 D=8:REM FOR TAPE, D=1
JJ 60 FORI=1TO583:READA:X=X+A:
NEXT:IFX<>61535THENPRINT"
DATA STATEMENT ERROR":S
TOP
QD 70 RESTORE:FORJ=1TO47:READM
(J):NEXT
DH 80 PRINT"[DOWN]IS YOUR PRIN
TER A COMMODORE 1525":PR
INT"COMPATIBLE (Y/N)":
CF 90 INPUTT$:IFT$<>"Y"ANDT$<>

```

```

"N"THENPRINT:GOTO80
BG 100 IFT$="N"THEN120
XK 110 M(23)=1:M(26)=0:M(27)=1
:M(28)=8:M(32)=1:M(33)=
15:M(37)=0:M(42)=0:M(47
)=17
RS 120 PRINT"[DOWN]NOW WRITING
THE +4SCREEN DUMP FILE.
..."
KF 130 OPEN2,D,2,"0:+4SCREEN DU
MP,P,W":PRINT#2,CHR$(1)
+CHR$(16);
AJ 140 FORJ=1TO47:PRINT#2,CHR$(
M(J));:NEXT
XJ 150 READA:IFA>-1THENPRINT#2
,CHR$(A);:GOTO 150
DS 160 CLOSE2:PRINT"[DOWN]DONE
.":END
PE 170 DATA 17,16,26,0,222,32,
156,58,158,52,49,49,54,
58,162,0
XC 180 DATA 0,0,0,76,48,16,0,1
4,4,4,3,27,65,7,0,3
PH 190 DATA 27,65,12,0,2,27,75
,0,0,2,64,1,0,0,13
BP 200 DATA 120,169,66,133,43,
169,18,133,44,173,20,3,
141,153,16,173,21
JH 210 DATA 3,141,154,16,173,2
,3,141,113,16,173,3,3,1
41,114,16
SB 220 DATA 169,98,141,2,3,169
,16,141,3,3,169,0,141,1
55,16,88
DM 230 DATA 96,120,72,169,115,
141,20,3,169,16,141,21,
3,104,88,76
EJ 240 DATA 0,0,120,72,173,155
,16,208,29,173,67,5,201
,6,208,22
QG 250 DATA 238,155,16,88,165,
253,72,165,254,72,32,16
9,16,104,133,254
FF 260 DATA 104,133,253,206,15
5,16,104,76,14,206,0,23
4,234,234,234,234
FH 270 DATA 234,234,234,234,23
4,234,234,234,169,0,141
,159,16,173,24,16
CX 280 DATA 174,25,16,172,26,1
6,32,186,255,169,0,32,1
89,255,32,192
QK 290 DATA 255,174,24,16,32,2
01,255,32,183,255,41,12
8,240,3,76,128
AB 300 DATA 17,173,27,16,162,2
8,160,16,32,25,18,174,4
7,16,240,8
AD 310 DATA 169,32,32,210,255,
202,208,248,173,37,16,1
62,38,160,16,32
MX 320 DATA 25,18,173,42,16,16
2,43,160,16,32,25,18,16
9,0,141,156
HF 330 DATA 16,141,157,16,173,
159,16,141,158,16,169,0
,141,164,16,141
JC 340 DATA 161,16,32,46,18,78
,162,16,46,161,16,238,1
58,16,238,164
DG 350 DATA 16,174,164,16,224,
7,208,234,24,46,161,16,
174,23,16,240
EC 360 DATA 19,78,161,16,169,0
,162,6,78,161,16,42,202
,16,249,9
JH 370 DATA 128,141,161,16,173
,161,16,32,210,255,238,
156,16,208,3,238
CA 380 DATA 157,16,174,156,16,
224,64,208,171,174,157,
16,224,1,208,164

```


CX 390 DATA 169,13,32,210,255,
173,159,16,24,105,7,141
159,16,201,200
JX 400 DATA 176,3,76,220,16,17
3,32,16,162,33,160,16,3
2,25,18,173
JD 410 DATA 24,16,32,195,255,3
2,204,255,96,169,163,13
3,253,169,16,133
FG 420 DATA 254,169,0,141,163,
16,173,158,16,201,200,1
76,16,173,157,16
HS 430 DATA 201,1,144,10,208,7
173,156,16,201,64,144,
1,96,173,158
EH 440 DATA 16,74,74,74,141,16
5,16,173,157,16,74,173,
156,16,106,74
DB 450 DATA 74,141,166,16,173,
158,16,41,7,141,167,16,
173,156,16,73
BJ 460 DATA 255,41,7,141,168,1
6,169,1,174,168,16,240,
4,10,202,208
AC 470 DATA 252,141,168,16,169
0,133,254,173,166,16,1
0,38,254,10,38
AR 480 DATA 254,10,38,254,24,1
09,167,16,133,253,165,2
54,105,32,133,254
KF 490 DATA 174,165,16,240,16,
24,169,64,101,253,133,2
53,169,1,101,254
CX 500 DATA 133,254,202,208,24
0,160,0,96,201,0,240,16
134,253,132,254
KM 510 DATA 160,0,170,177,253,
32,210,255,200,202,208,
247,96,169,0,141
DB 520 DATA 162,16,32,138,17,1
77,253,45,168,16,240,3,
238,162,16,96
HQ 530 DATA 0,0,0,0,0,0,-1

0909:0D 0D 0D 0D 0D 0D 0D 1B
0911:0D 0D 20 20 20 20 20 D4
0919:20 20 20 20 20 20 20 2B
0921:20 20 0D 0D 0D 0D 0D 81
0929:0D 20 20 C9 4E 53 45 52 07
0931:54 20 41 20 C7 45 4F 53 E4
0939:20 44 49 53 4B 20 41 4E 76
0941:44 20 50 52 45 53 53 20 EA
0949:D2 C5 D4 D5 D2 CE 0D 00 1A
0951:20 24 10 C9 0D D0 F9 60 1B
0959:A9 0F A2 08 A0 0F 20 BA 15
0961:FF A9 02 A2 CE A0 09 20 73
0969:BD FF 20 C0 FF B0 22 20 91
0971:D1 09 B0 1D A9 04 A2 08 41
0979:A0 04 20 BA FF A9 01 A2 D7
0981:D0 A0 09 20 BD FF 20 C0 36
0989:FF B0 06 20 D1 09 B0 01 9F
0991:60 20 03 0A A9 A4 A0 09 07
0999:20 81 10 20 51 09 68 68 08
09A1:4C 28 08 11 11 11 1C 12 0D
09A9:A4 49 53 4B 20 C5 52 52 9E
09B1:4F 52 21 92 1F 20 C8 49 A1
09B9:54 20 D2 C5 D4 D5 D2 CE 27
09C1:20 54 4F 20 D2 45 53 54 8B
09C9:41 52 54 0D 0D 49 30 23 15
09D1:A2 0F 20 C6 FF 20 24 10 42
09D9:8D 01 0A 20 24 10 8D 02 B4
09E1:0A 20 24 10 C9 0D D0 F9 A4
09E9:AD 01 0A C9 30 D0 0C AD 7B
09F1:02 0A C9 30 D0 05 20 36 D4
09F9:10 18 60 20 36 10 38 60 EA
0A01:00 00 A9 04 20 C3 FF A9 44
0A09:01 20 C3 FF A9 0F 20 C3 AB
0A11:FF 20 36 10 60 A9 13 A2 67
0A19:12 A0 00 20 B4 0F 60 AE B1
0A21:AB 13 AC AC 13 20 BA 12 D0
0A29:60 A9 01 A2 04 A0 07 20 F2
0A31:BA FF A9 00 20 BD FF 20 EF
0A39:C0 FF B0 1E A2 01 20 C9 C8
0A41:FF B0 17 A9 4F A0 0A 20 30
0A49:81 10 20 36 10 60 1B 41 03
0A51:1B 38 00 00 00 00 00 01
0A59:00 20 03 0A A9 6D A0 14
0A61:0A 20 81 10 20 51 09 68 74
0A69:68 4C 28 08 11 11 11 1C 55
0A71:12 D0 52 49 4E 54 45 52 42
0A79:20 C5 52 52 4F 52 21 92 17
0A81:1F 20 C8 49 54 20 D2 C5 69
0A89:D4 D5 D2 CE 20 54 4F 20 D5
0A91:D2 45 53 54 41 52 54 0D 19
0A99:00 A9 A1 A0 0A 4C 81 10 EA
0AA1:0D D3 54 41 4E 44 42 59 31
0AA9:2C 20 D0 52 49 4E 54 49 90
0AB1:4E 47 20 C4 49 52 45 43 70
0AB9:54 4F 52 59 2E 2E 2E 2E 60
0AC1:00 A2 01 20 C9 FF A2 17 4B
0AC9:20 5E 0B A9 ED A0 0A 20 A7
0AD1:81 10 A9 90 A0 13 20 B7 32
0AD9:10 20 78 10 A9 2D A2 50 A5
0AE1:20 D2 FF CA D0 FA 20 78 92
0AE9:10 4C 36 10 C4 49 52 45 16
0AF1:43 54 4F 52 59 20 4F 46 FB
0AF9:20 C4 49 53 4B 20 3A 20 1D
0B01:00 20 C2 0A A2 01 20 C9 3B
0B09:FF A2 20 20 5E 0B A9 2B 6B
0B11:A0 0B 20 81 10 20 78 10 58
0B19:20 78 10 AE AB 13 AC AC F9
0B21:13 A9 14 20 B4 0F 20 98 6A
0B29:0C 60 C2 4F 52 44 45 52 2B
0B31:20 4F 46 20 C4 49 53 4B 33
0B39:00 A2 01 20 C9 FF A2 23 D0
0B41:20 5E 0B A9 57 A0 0B 20 6E
0B49:81 10 AE B3 0F 20 43 11 C5
0B51:20 78 10 4C 78 10 D0 41 43
0B59:47 20 20 23 00 A9 20 20 A1
0B61:D2 FF CA D0 FA 60 A2 01 E6
0B69:8E B3 0F AE 00 13 AC 01 27
0B71:13 A9 14 20 B4 0F B0 27 6A
0B79:20 97 0B 4C 91 0B AE 00 C1
0B81:14 F0 12 AC 01 14 A9 14 AA
0B89:20 B4 0F B0 12 20 97 0B 15
0B91:EE B3 0F D0 E9 60 20 C2 CE
0B99:0A 20 3A 0B 4C 98 0C A2 34
0BA1:01 20 C9 FF A9 B9 A0 0B F9
0BA9:20 81 10 A9 B3 A0 0F 20 2B

0BB1:81 10 20 78 10 4C 91 0B F7
0BB9:C9 4C 4C 45 47 41 4C 20 9D
0BC1:D3 45 43 54 4F 52 20 D0 95
0BC9:41 47 45 20 23 00 A9 04 6D
0BD1:20 C3 FF A9 0F 20 C3 FF 04
0BD9:A2 01 20 C9 FF 20 63 0F 78
0BE1:A9 01 20 C3 FF 20 36 10 4A
0BE9:60 A9 19 A0 0C 20 81 10 BB
0BF1:20 24 10 C9 59 F0 1E C9 54
0BF9:D9 F0 1A C9 4E F0 04 C9 21
0C01:CE D0 ED A9 CE 20 D2 FF A9
0C09:A9 4F 20 D2 FF A9 4F A0 E0
0C11:0C 20 81 10 60 4C 28 08 F4
0C19:0D 11 11 1F C6 49 4E 49 51
0C21:53 48 45 44 C0 20 52 49 14
0C29:4E 54 49 4E 47 20 C4 49 19
0C31:52 45 43 54 4F 52 59 2E 16
0C39:0D 0D C1 4E 4F 54 48 45 D9
0C41:52 20 C4 49 52 45 43 54 3A
0C49:4F 52 59 3F 20 00 0D 0D E4
0C51:9E 20 20 D4 48 41 4E 4B 41
0C59:53 20 46 4F 52 20 D5 53 F2
0C61:49 4E 47 20 54 48 45 20 0B
0C69:C7 45 4F 53 20 C4 49 52 CE
0C71:45 43 54 4F 52 59 20 2A E0
0C79:20 20 20 20 20 20 20 20 91
0C81:20 20 20 20 20 20 20 20 99
0C89:20 20 20 20 20 20 20 20 A1
0C91:20 20 20 20 1F 0D 00 A9 9E
0C99:00 0D B1 0C 20 B2 0C AD 9D
0CA1:B1 0C 18 69 20 F0 06 8D 0F
0CA9:B1 0C 4C 9D 0C 4C 63 0F 68
0CB1:00 A9 14 85 FC AD B1 0C 1D
0CB9:85 FB 20 E7 0E 90 01 60 2B
0CC1:A0 15 B1 FB AA C8 B1 FB 3D
0CC9:A8 A9 15 20 B4 0F 08 A2 D9
0CD1:01 20 C9 FF A9 36 A0 0E 21
0CD9:20 81 10 AD B1 0C 18 69 9E
0CE1:05 A0 14 A2 10 20 A1 10 A5
0CE9:20 78 10 A9 4A A0 0E 20 AD
0CF1:81 10 A0 17 B1 FB AA C8 EF
0CF9:B1 FB 20 53 11 20 2E 10 98
0D01:20 6B 0F A0 02 B1 FB 20 E0
0D09:F1 0E 20 73 0F 20 78 10 D4
0D11:A9 51 A0 0E 20 81 10 A0 11
0D19:1E B1 FB 48 20 19 0E 38 6C
0D21:20 43 11 A9 A3 A0 0E 20 B4
0D29:81 10 20 6B 0F 68 AA 18 4A
0D31:20 43 11 20 2E 10 A9 9A EF
0D39:A0 0E 20 81 10 28 90 03 88
0D41:4C 16 0E A9 5F A0 0E 20 1D
0D49:81 10 A0 15 A9 4D 20 B7 08
0D51:10 20 78 10 A9 6D A0 0E DD
0D59:20 81 10 A0 19 B1 FB AA 22
0D61:C8 B1 FB 48 C8 B1 FB A8 FD
0D69:68 20 32 0F A9 8D A0 0E C9
0D71:20 81 10 A0 1C B1 FB 48 EF
0D79:C8 B1 FB A8 68 20 7B 0F 38
0D81:AD 45 15 C9 07 D0 0E A9 44
0D89:92 A0 0E 20 81 10 A0 15 7B
0D91:A9 75 20 B7 10 20 78 10 5F
0D99:20 27 0E B0 4C A9 7E A0 01
0DA1:0E 20 81 10 A2 15 86 FE 71
0DA9:A2 00 86 FD A0 48 20 DB 08
0DB1:0E A9 C3 A0 0E 20 81 10 C3
0DB9:A0 4A 20 DB 0E A9 C8 A0 C1
0DC1:0E 20 81 10 A0 4C 20 DB 6E
0DC9:0E 20 78 10 AD 45 15 C9 79
0DD1:04 D0 05 AD 46 15 F0 11 17
0DD9:A9 A7 A0 0E 20 81 10 A0 6F
0DE1:15 A9 61 20 B7 10 20 78 D5
0DE9:10 A9 B5 A0 0E 20 81 10 3B
0DF1:A0 15 A9 A0 A2 3C 20 B9 E0
0DF9:10 C0 3C B0 06 20 78 10 90
0E01:4C 78 10 20 78 10 A2 0D BB
0E09:20 5E 0B A0 15 A9 DC 20 61
0E11:B7 10 20 78 10 4C 78 10 9E
0E19:48 4A 4A AA 68 29 03 D0 9B
0E21:02 8A 60 E8 8A 60 AD 45 F1
0E29:15 C9 07 F0 06 C9 08 F0 8A
0E31:02 18 60 38 60 20 20 C7
0E39:20 20 20 CE 41 4D 45 20 BD
0E41:3A 20 00 20 C6 49 4C 45 48
0E49:20 D4 59 50 45 20 3A 00 F9
0E51:20 20 20 20 20 20 D3 49 FD

Directory Printer

See instruction in article on page 59
before typing in.

0801:20 08 A0 00 0E 32 30 38 8D
0809:38 3A 8F 20 44 49 52 45 E8
0811:43 54 4F 52 59 20 50 52 25
0819:49 4E 54 45 52 20 00 26 79
0821:08 AA 00 00 00 00 00 20 08
0829:8D 08 20 51 09 20 59 09 9F
0831:20 16 0A 20 20 0A B0 17 BB
0839:20 2A 0A 20 9A 0A 20 67 CB
0841:0B 20 02 0B 20 CF 0B 4C 72
0849:EA 0B A2 01 20 C9 FF 20 3E
0851:03 0A A9 60 A0 08 20 81 87
0859:10 20 51 09 4C 28 08 11 58
0861:11 11 1C 12 CE 4F 4E 2D 60
0869:C7 45 4F 53 20 C4 49 53 C7
0871:4B 21 92 1F 20 C8 49 54 BE
0879:20 D2 C5 D4 D5 D2 CE 20 0C
0881:54 4F 20 D2 45 53 54 41 22
0889:52 54 0D 00 A9 00 8D 20 02
0891:D0 A9 0C 8D 21 D0 A9 9F 0E
0899:A0 08 20 81 10 60 93 1F 60
08A1:11 0E 08 11 20 20 20 20 B1
08A9:20 20 20 20 C7 45 4F D1
08B1:53 20 C4 49 52 45 43 54 23
08B9:4F 52 59 20 D0 52 49 4E E3
08C1:54 45 52 0D 0D 20 20 20 B1
08C9:C3 4F 50 59 52 49 47 48 BD
08D1:54 20 31 39 38 38 C3 74
08D9:CF CD 0D D5 D4 C5 21 20 DC
08E1:D0 55 42 2E 2C 20 C9 4E 9E
08E9:43 2E 0D 20 20 20 20 20 AC
08F1:20 20 20 20 C1 4C 4C 0D
08F9:20 D2 49 47 48 54 53 20 C6
0901:D2 45 53 45 52 56 45 44 47


```

0E59:5A 45 20 3A 20 00 C6 49 73
0E61:4C 45 20 C3 4C 41 53 53 96
0E69:20 3A 20 00 20 20 CD 4F 94
0E71:44 49 46 49 45 44 20 3A 15
0E79:20 CF 4E 20 00 20 CD 45 C6
0E81:4D 2E 20 C9 4E 46 4F 20 BA
0E89:3A 20 24 00 20 C1 54 20 20
0E91:00 20 D5 53 49 4E 47 20 D7
0E99:00 C2 4C 4F 43 4B 53 29 FB
0EA1:0D 00 CB 20 20 00 20 20 21
0EA9:20 20 C1 55 54 48 4F 52 20
0EB1:20 3A 20 00 20 20 C3 4F C8
0EB9:4D 4D 45 4E 54 53 20 3A C7
0EC1:20 00 54 4F 20 24 00 20 1F
0EC9:2D 2A 20 20 20 C5 4E 54 B7
0ED1:52 59 20 C1 54 20 3A 20 45
0ED9:24 00 B1 FD AA 88 B1 FD F6
0EE1:20 99 10 4C 2E 10 A0 02 30
0EE9:B1 FB D0 02 38 60 18 60 EB
0EF1:29 07 A2 02 DD 0A 0F F0 FE
0EF9:07 E8 E8 E8 E8 0F 90 F4 D8
0F01:BD 0C 0F A8 CA BD 0C 0F E1
0F09:4C 81 10 00 2E 0F 01 1E 7D
0F11:0F 02 22 0F 03 26 0F 04 3F
0F19:2A 0F 63 2E 0F D3 C5 D1 84
0F21:00 D0 D2 C7 0F D5 D3 D2 1C
0F29:00 D2 C5 CC 00 3F 3F 3F 3C
0F31:00 8E 51 0F 8C 52 0F AA 84
0F39:38 20 FB 10 20 53 0F AE 17
0F41:52 0F 38 20 FB 10 20 53 09
0F49:0F AE 51 0F 38 4C FB 10 B0
0F51:00 00 48 A9 2F 20 D2 FF B2
0F59:68 60 48 A9 3A 20 D2 FF 5F
0F61:68 60 48 A9 0C 20 D2 FF F5
0F69:68 60 48 A9 28 D2 FF DE
0F71:68 60 48 A9 29 D2 FF EE
0F79:68 60 A2 00 8E B2 0F C9 5F
0F81:0C 90 0A CE B2 0F 38 E9 24
0F89:0C D0 02 A9 0C AA 38 20 58
0F91:FB 10 20 5B 0F 98 AA 38 D3
0F99:20 FB 10 20 2E 10 2C B2 87
0FA1:0F 30 04 A9 41 D0 02 A9 69
0FA9:50 20 D2 FF A9 4D 4C D2 40
0FB1:FF 00 00 8D C8 0F 18 20 7B
0FB9:D3 0F 90 01 60 A2 04 20 5D
0FC1:C6 FF 20 24 10 8D 00 10 50
0FC9:EE C7 0F D0 F5 20 36 10 EC
0FD1:18 60 8E 22 10 8C 23 10 11
0FD9:18 20 BA 12 90 01 60 A2 70
0FE1:0F 20 C9 FF A9 1A A0 10 CF
0FE9:20 81 10 A2 04 20 2E 10 B1
0FF1:18 20 FB 10 A2 00 20 2E 28
0FF9:10 18 20 FB 10 AE 22 10 79
1001:20 2E 10 18 20 FB 10 AE FF
1009:23 10 20 2E 10 18 20 FB C2
1011:10 20 78 10 20 36 10 18 63
1019:60 55 31 3A 00 55 32 3A 7C
1021:00 12 00 8A 48 20 E4 FF FA
1029:A8 68 AA 98 60 48 A9 20 2E
1031:20 D2 FF 68 60 48 8A 48 1E
1039:20 CC FF A2 FF CA D0 FD 91
1041:68 AA 68 60 48 98 48 8A 13
1049:48 48 29 0F AA BD 68 10 E2
1051:A8 68 4A 4A 4A 4A BD 5C
1059:68 10 20 D2 FF 98 20 D2 58
1061:FF 68 AA 68 AA 68 60 30 4F
1069:31 32 33 34 35 36 37 38 81
1071:39 C1 C2 C3 C4 C5 C6 48 46
1079:A9 0D 20 D2 FF 68 60 60 A5
1081:8D 8C 10 8C 8D 10 8A 48 60
1089:A0 00 B9 00 F0 F0 06 20 A8
1091:D2 FF C8 D0 F5 68 AA 60 48
1099:20 45 10 A2 20 45 10 60 5E
10A1:20 B9 10 8E B6 10 A9 20 94
10A9:4C B0 10 20 D2 FF C8 CC 15
10B1:B6 10 90 F7 60 00 A2 FF 0B
10B9:8D C7 10 8C C8 10 8E E2 E3
10C1:10 8A 48 A0 00 B9 00 F0 77
10C9:C9 20 90 12 C9 80 B0 0E C9
10D1:C8 E2 10 B0 09 20 E3 10 BE
10D9:20 D2 FF C8 D0 E7 68 AA EC
10E1:60 00 C9 40 90 13 C9 60 34
10E9:B0 05 09 80 4C FA 10 C9 05
10F1:60 90 06 C9 7B B0 02 29 8F
10F9:DF 60 48 8A 48 90 08 A2 0B

```

```

1101:00 8E 37 11 4C 0D 11 A2 1A
1109:30 8E 37 11 A2 00 8E 42 53
1111:11 C9 10 90 12 48 F8 AD 8A
1119:42 11 18 69 06 8D 42 11 36
1121:68 38 E9 10 D8 D0 EA F8 9C
1129:68 18 69 00 6D 42 11 90 D9
1131:03 EE 37 11 48 A9 00 20 91
1139:D2 FF 68 D8 AA 68 4C 45 34
1141:10 00 48 8A 48 98 48 A9 FB
1149:00 20 CD BD 68 A8 68 AA 6A
1151:68 60 E0 01 F0 4A E0 00 5E
1159:D0 21 C9 00 D0 01 60 A2 53
1161:02 DD 81 11 F0 07 E8 9B
1169:E8 E0 1B 90 F4 20 2E 10 39
1171:BD 83 11 A8 CA BD 83 11 65
1179:4C 81 10 A9 A8 A0 12 4C F6
1181:81 10 01 CF 11 02 DD 11 E2
1189:03 EE 11 04 F8 11 05 04 65
1191:12 06 2F 12 09 13 12 0A 08
1199:22 12 0C 41 12 63 8F 12 36
11A1:A2 02 DD BB 11 F0 07 E8 50
11A9:E8 E8 E0 F0 F0 F4 20 2E 4E
11B1:10 BD BD 11 A8 CA BD BD BD
11B9:11 4C 81 10 04 52 12 06 3C
11C1:61 12 07 74 12 08 85 12 0F
11C9:0C 52 12 63 9B 12 C2 41 EA
11D1:53 49 43 20 D0 52 4F 47 10
11D9:52 41 4D 00 C1 53 45 66
11E1:4D 42 4C 59 20 D0 52 4F 92
11E9:47 52 41 4D 00 C4 41 54 2B
11F1:41 20 C6 49 4C 45 00 D3 75
11F9:59 53 54 45 4D 20 C6 49 3E
1201:4C 45 00 C4 45 53 4B 20 17
1209:C1 43 43 45 53 4F 52 74
1211:59 00 D0 52 49 4E 54 45 92
1219:52 20 C4 52 49 56 45 52 AC
1221:00 C9 4E 50 55 54 20 C4 87
1229:52 49 56 45 52 00 C1 50 4E
1231:50 4C 49 43 41 54 49 4F 2B
1239:4E 20 28 D3 C5 D1 29 00 96
1241:D3 59 53 54 45 4D 20 C2 B7
1249:4F 4F 54 20 C6 49 4C 45 AE
1251:00 D3 59 53 54 45 4D 20 3D
1259:D0 52 4F 47 52 41 4D 00 0B
1261:C1 50 50 4C 49 43 41 54 77
1269:49 4F 4E 20 28 D6 CC C9 D1
1271:D2 29 00 C1 50 50 4C 49 0B
1279:43 41 54 49 4F 4E 20 C4 67
1281:41 54 41 00 C6 4F 4E 54 E7
1289:20 C6 49 4C 45 00 D5 4E 81
1291:4B 4E 4F 57 4E 20 D3 C5 AE
1299:D1 00 D5 4E 4B 4E 4F 57 CF
12A1:4E 20 D6 CC C9 D2 00 D5 0C
12A9:4E 4B 4E 4F 57 4E 20 D3 8E
12B1:54 52 55 43 54 55 52 45 55
12B9:00 E0 00 F0 1C E0 24 B0 82
12C1:18 E0 12 B0 03 C0 15 60 1D
12C9:E0 19 B0 03 C0 13 60 E0 DE
12D1:1F B0 03 C0 12 60 C0 11 C2
12D9:60 38 60 00 00 00 00 48

```

ML Cloner

Article on page 64.

```

HF 10 REM COPYRIGHT 1988 COMPU
TEI PUBLICATIONS INC. -
{SPACE}ALL RIGHTS RESERV
ED
SD 20 IFPEEK(65530)=5THENBANK1
5:CP=128
PD 30 EA=174:SA=193:IFPEEK(655
30)=164THENC=16:EA=157:
SA=178
BD 40 B=16:Z=256:PRINTCHR$(14)
"CLR">{3 SPACES}COPYRIGH
T 1988 COMPUTE! PUB., IN
C."
JX 50 PRINTTAB(11)"ALL RIGHTS
{SPACE}RESERVED"
AX 60 PRINT"{RVS}";:FORI=1TO40
:PRINTCHR$(32);:NEXT:PRI

```

```

NTSPC(15)"{UP}ML CLONER"
CC 70 INPUT"{DOWN}FILENAME";N$
:IFN$=""THENPRINT"{CLR}"
:END
SX 80 GOSUB350:IFA=62THENPRINT
"{RVS}FILENAME NOT FOUND
ON THIS DISK." :N$="" :GO
TO70
BQ 90 IFATHENPRINT"{RVS}ERROR:
"B$":END
RF 100 PRINT"{DOWN}LOADING "N$
;:IFCP=128THENBLOAD(N$)
,B0:GOTO130
RH 110 POKEL47,0:IFCP=16THENSYS
S43115N$,8,1:SYS61516:G
OTO130
SE 120 SYS57812N$,8,1:SYS62631
PX 130 PRINT". COMPLETED."
RQ 140 L=ASC(A$+CHR$(0)):H=ASC
(B$+CHR$(0)):S=L+Z*H:E=
PEEK(EA)+Z*PEEK(EA+1)-1
MG 150 PRINTSPC(18)"{DOWN}HEX
{3 SPACES}DEC":D=S:GOSU
B330:D=E:HS$=H$:H$="" :G
OSUB330
JM 160 PRINT"STARTING ADDRESS:
"HS$TAB(23)S
BP 170 PRINT"ENDING ADDRESS:
{3 SPACES}"H$TAB(23)E
JP 180 PRINT"{DOWN}READY TO CO
PY THIS FILE NOW (Y/N)?
";:GOSUB310:IFK$<>"Y"TH
EN290
BR 190 PRINT"{DOWN}WANT TO CHA
NGE THE FILENAME (Y/N)?
";:GOSUB310
FB 200 IFK$="Y"THENPRINT"
{DOWN}OLD FILENAME: "N$
:INPUT"NEW FILENAME";N$
JE 210 PRINT"{DOWN}PRESS <RETU
RN> FOR YOUR COPY."
FC 220 GETK$:IFK$<>CHR$(13)THE
N220
PK 230 GOSUB350:IFA>0ANDA<>62T
HENPRINT"{RVS}ERROR: "B
$:GOTO180
DJ 240 IFA=0THENPRINT"{DOWN}FI
LENAME: "N$:PRINT"{RVS}
EXISTS ON THIS DISK." :G
OTO180
BK 250 PRINT"{DOWN}{RVS}COPYIN
G "N$;:IFCP=128THENBSAV
E(N$),B0,P(S)TOP(E+1):G
OTO280
BA 260 IFCP=16THENSYS43115N$,8
,1:POKESA,L:POKESA+1,H:
SYS61860:GOTO280
CR 270 SYS57812N$,8,1:POKESA,L
:POKESA+1,H:SYS62957
RD 280 PRINT". COMPLETED." :PRI
NT"{DOWN}COPY. IT AGAIN
{SPACE}(Y/N)?";:GOSUB31
0:IFK$="Y"THEN190
EB 290 PRINT"{DOWN}WANT TO RUN
THIS PROGRAM AGAIN (Y/
N)?";:GOSUB310:IFK$="Y"
THENRUN
HJ 300 END
MS 310 GETK$:IFK$<>"Y"ANDK$<>"
N"THEN310
KR 320 PRINT"{RIGHT}"K$:RETURN
KB 330 X=((D/B)-INT(D/B))*B:H$
=CHR$(7*ABS(X>9)+X+48)+
H$:D=(D-X)/B:IFDTHEN330
HP 340 RETURN
QR 350 OPEN15,8,15,"I0":OPEN8
,8,8,"0":+N$+"P,R"
HD 360 INPUT#15,A,B$:IFA=0ANDS
=ETHENGET#8,A$,B$
XS 370 CLOSE8:CLOSE15:RETURN

```


BRAND NEW AMIGA 500 only \$135 or NEW C128D w/built-in drive only \$19

with trade-in of C128 Computer, 1571 Disk Drive, 1902 Monitor, 1200 Modem.

**BRAND NEW 2002 RGB Color Monitor \$229 or
NEW C1581 3 1/2" drive \$119 or NEW
C1571 drive \$139 with trade-in of 1541 drive.**

NEW & USED EQUIPMENT

PACKAGE DEAL: Get a used C64, and a color monitor for only \$234
OR a used C128 and a 1571 drive for only \$375.

We carry the full line of Commodore/Amiga/PC products.

NEW PRODUCTS

Commodore 64C			
64C CPU w/GEOS	\$165	1351 Mouse	\$39
1581 3-1/2" Drive	\$199	1802C Color Mon	\$189
Commodore C128			
128D w/built-in drive	\$489	1571 Drive	\$219
128 CPU	\$245	1750 512k RAM	\$159
Amiga			
A2000 CPU	\$1449	A2052 2Mb RAM	\$425
A1060 SIDE CAR	\$799	A1680 1200 Baud	\$119
A500 CPU	\$589	A501 512k RAM	\$169
A2002 RGB Mon.	\$299	A2088D Bridgecard	\$599
PRINTERS			
Star NX-10C	\$189	Sar NP-10	\$149
Star NB-15, 300cps, 100 cps LQ, IBM/EPSON Compatible	\$799	Xetec JR Intfc	\$39
Star NB-2410, 216cps, 72 cps LQ, IBM/EPSON Compatible	\$475	Full line of STAR!!!	
Star ND-10, 180cps, 45 cps LQ, IBM/EPSON Compatible	\$349		
Star NX-10	\$169	Xetec SR Intfc	\$59
MODEMS			
Avatex 1200	\$85	Avatex 2400hc	\$189
Avatex 1200hc	\$99	Prac.Per.2400hc	\$199
		SmartLink 2400hc	\$189
		Aprotek Intfc	\$36

PC COMPATIBLES

PC XT Compatible — Dual mono Hercules & Color (CGA) compatible graphics card, 4.77/10 Mhz Phoenix BIOS, More than 3x as fast as the IBM XT, 640 K Ram, 360K drive, Printer/Modem/Game ports, Clock/calendar, AT Style keyboard and case. Only \$619*

*Add \$89 for monochrome monitor, add \$269 for RGB Color monitor.

Hard drives: Miniscribe 30MB w/cnt \$369, 20 MB w/cnt \$339 installed

*All references to trade-ins in our ad assume equipment to be in good working condition. Shipping/handling will be added to all prices.
SHIPPING/HANDLING: Charges based on actual weight of order.

POWER SUPPLIES

C64 Replacement, repairable power supply only \$39, C128 replacement only \$75.
Amiga 500 replacement only \$99.

We want to trade for YOUR EQUIPMENT! If your equipment is not mentioned, then call us now for an instant quote.

We pay cash for used equipment and accessories.
CALL for an instant price quote on your equipment.
Nothing is too old or obsolete!

We carry new and used equipment for Commodore, IBM compatibles, and Atari — everything from VIC20, C64, Atari 400/800, ST, to the Amiga 2000!

Quantities of USED products vary. Call before ordering.

Prices are subject to change without notice.

All used products are guaranteed to be in good working condition.

We pay cash for damaged equipment!

USED PRODUCTS

C64 CPU	\$99	C128 CPU	\$199	1571 Drive	\$179
1600 300 Modem	\$25	Mono Monitor	\$39	Color Monitors from	\$129
MPS 801 Printer	\$72	Datascassette	\$19	1541 Drive	\$119
C64C CPU w/Geos	\$135	VIC20 CPU	\$39	C1802 Monitor	\$149
1670 1200 Modem	\$79	1660 300 Modem	\$34	Hundreds of	
VIC 1525 Printer	\$79	Gemini 10 Printer	\$119	Software & Books!!	

CALL to place your order and for price quotes on your equipment.
Call for shipping and handling.

2017 13th St., Suite A
Boulder, CO 80302

Computer Repeats, Inc.

MAIL-ORDER DIVISION

VOICE: (303) 939-8144 MODEM (303) 939-8174

MASTERCARD/VISA/CHOICE/C.O.D

UNLEASH THE DATA ACQUISITION AND CONTROL POWER OF YOUR COMMODORE C64 OR C128. We have the answers to all your control needs.

NEW! 80-LINE SIMPLIFIED DIGITAL I/O BOARD



Create your own autostart dedicated controller without relying on disk drive.

- Socket for standard ROM cartridge.
- 40 separate buffered digital output lines can each directly switch 50 volts at 500 mA.
- 40 separate digital input lines. (TTL).
- I/O lines controlled through simple memory mapped ports each accessed via a single statement in Basic. No interface could be easier to use. A total of ten 8-bit ports.
- Included M.L. driver program optionally called as a subroutine for fast convenient access to individual I/O lines from Basic.
- Plugs into computer's expansion port. For both C64 & C128, I/O connections are through a pair of 50-pin professional type strip headers.
- Order Model SS100 Plus. Only \$119! Shipping paid USA. Includes extensive documentation and program disk. Each additional board \$109.

We take pride in our interface board documentation and software support, which is available separately for examination. Credit against first order.
SS100 Plus, \$20. 64IF22 & ADC0816, \$30.

OUR ORIGINAL ULTIMATE INTERFACE



- Universally applicable dual 6522 Versatile Interface Adapter (VIA) board.
- Industrial control and monitoring. Great for laboratory data acquisition and instrumentation applications.
- Intelligently control almost any device.
- Perform automated testing.
- Easy to program yet extremely powerful.
- Easily interfaced to high-performance A/D and D/A converters.
- Four 8-bit fully bidirectional I/O ports & eight handshake lines. Four 16-bit timer/counters. Full IRQ interrupt capability. Expandable to four boards.

Order Model 64IF22. \$169 postpaid USA. Includes extensive documentation and programs on disk. Each additional board \$149. Quantity pricing available. For both C64 and C128.

A/D CONVERSION MODULE

Fast. 16-channel, 8-bit. Requires above. Leaves all VIA ports available. For both C64 and C128. Order Model 64IF/ADC0816. Only \$69.

SERIOUS ABOUT PROGRAMMING?

SYMBOL MASTER MULTI-PASS SYMBOLIC DISASSEMBLER. Learn to program like the experts! Adapt existing programs to your needs! Disassembles any 6502/6510/undoc/65C02/8502 machine code program into beautiful source. Outputs source code files to disk fully compatible with your MAE, PAL, CBM, Develop-64, LADS, Merlin or Panther assembler, ready for re-assembly and editing. Includes both C64 & C128 native mode versions. 100% machine code and extremely fast. 63-page manual. The original and best is now even better with Version 2.1! Advanced and sophisticated features far too numerous to detail here. \$49.95 postpaid USA.

C64 SOURCE CODE. Most complete available reconstructed, extensively commented and cross-referenced assembly language source code for Basic and Kernal ROMs, all 16K. In book form, 242 pages. \$29.95 postpaid USA.

PTD-6510 SYMBOLIC DEBUGGER for C64. An extremely powerful tool with capabilities far beyond a machine-language monitor. 100-page manual. Essential for assembly-language programmers. \$49.95 postpaid USA.

MAE64 version 5.0. Fully professional 6502/65C02 macro editor/assembler. 80-page manual. \$29.95 postpaid USA.

NEW ADDRESS!

SCHNEDLER SYSTEMS

Dept. G3, 25 Eastwood Road, P.O. Box 5964
Asheville, North Carolina 28813 Telephone (704) 274-4646

NEW ADDRESS!

SOFTWARE DISCOUNTERS OF AMERICA

S.D. of A.

For Orders Only—1-800-225-7638
PA Orders—1-800-223-7784
Customer Service 412-361-5291

- Free shipping on orders over \$100 in continental USA
- No Surcharge for VISA/MasterCard
- Your card is not charged until we ship

Commodore 64/128 Bargain Basement—Dozens of Titles For Less Than \$10!

THUNDER MOUNTAIN

It's a dot-eat-dot world. Are you hungry for action? The most addictive arcade game of all time.



Pac Man
Our Discount Price \$6.88

ACCOLADE

Dambusters\$9.88
Law of the West\$9.88
PSI-5 Trading Company\$9.88
ACTIVISION
Cross Country\$9.88
Road Race\$9.88
Ghostbusters\$9.88
Hacker\$9.88
Little Computer People\$9.88
ARTWORK
Beach Blanket\$9.88
Volleyball\$9.88
Equestrian Show\$9.88
Jumper\$9.88
Highland Games\$9.88
Hole in One + Six\$9.88
Police Cadet\$9.88
Thai Boxing\$9.88
AVANTAGE
Deceptor\$9.88
Desert Fox\$9.88
Power\$9.88
Project Space Station\$9.88
Sigma 7\$9.88
Spy vs. Spy 1 & 2\$9.88
BRODERBUND
Choplifter/David's\$9.88
Midnight Magic\$9.88
Karateka\$9.88
Loderunner\$9.88

CDA

America Cooks Series:
American\$9.88
Chinese\$9.88
French\$9.88
Italian\$9.88
Mexican\$9.88
DATA EAST
Express Raiders\$9.88
Last Mission\$9.88
Q-Bert\$9.88
TNK III\$9.88
EASY WORKING/SPINNAKER
Filer\$6.88
Planner\$6.88
Writer\$6.88
ELECTRIC DREAMS
Spindizzy\$9.88
Zoids\$9.88
ELECTRONIC ARTS
Adv. Const. Set\$9.88
Age of Adventure\$9.88
America's Cup Sailing\$9.88
Archon\$9.88
Archon 2: Adept\$9.88
Financial Cookbook\$9.88
Heart of Africa\$9.88
Lords of Conquest\$9.88
Mail Order Monsters\$9.88
Mind Mirror\$9.88

Movie Maker\$9.88
M.U.L.E.\$9.88
Murder Party\$9.88
Music Const. Set\$9.88
One-on-One\$9.88
Pinball Const. Set\$9.88
Racing Dest. Set\$9.88
Seven Cities of Gold\$9.88
Skyfox\$9.88
Super Boulder Dash\$9.88
Touchdown Football\$9.88
Ultimate Wizard\$9.88
EPYX
Ballblazer\$6.88
Barbie\$6.88
Jet Combat Simulator\$6.88
Jumpman\$6.88
Gateway to Apsah\$6.88
Impossible Mission\$6.88
Koronis Rift\$6.88
Pitstop 1 or 2\$6.88
P.S. Graphics Scrapbook\$9.88
#1: Sports\$9.88
Ernie's Big Splash\$6.88
Ernie's Magic Shapes\$6.88
Grover's Animal Adv.\$6.88
Pals Around Town\$6.88
KONAMI
Circus Charlie\$9.88
KONAMI/ACTION CITY
Hyper Sports/Ping Pong\$9.88
Mikie\$9.88
Track & Field\$9.88
MASTERTRONIC
Action Biker\$4.88
Boulder\$6.88
Captain Zap\$6.88
Feud\$6.88
Games Creator\$6.88
Infinity Machine (R)\$9.88
Knight Games\$6.88
Last V-8\$4.88
Master of Magic\$4.88
Ninja\$4.88
Pro Golf\$4.88

The Activision Little Computer People Discovery Kit™

Amazing software lets you meet the little people living inside your computer!
Make contact with the little people living inside your computer.

Our Discount Price \$9.88



#2: Off the Wall\$9.88
#3: School\$9.88
Rescue on Fractalus\$6.88
The Eidolon\$6.88
FISHER PRICE
Dance Fantasy\$4.88
Memory Manor\$4.88
Number Tumblers\$4.88
Sea Speller\$4.88
*all above titles on cart.
GAMESTAR
Star League Baseball/On Field Football\$9.88
HES
Microsoft Multiplan\$9.88
HI-TECH EXPRESSIONS
Award Ware\$9.88
Card Ware\$6.88
Party Ware\$9.88
HI-TECH EXPRESSIONS
Sesame Street Series:
Astro-Grover\$6.88
Big Bird's Special\$6.88
Delivery\$6.88
Prowler: War in 2150\$6.88
Shogun\$6.88
Speed King\$6.88
Storm\$6.88
Vegas Poker & Jackpot\$4.88
Water Polo\$6.88
MINDSCAPE
Bank St. Music Writer\$9.88
RANDOM HOUSE
Charlie Brown's ABC's\$6.88
Snoopy's Reading Machine\$6.88
Snoopy Writer\$6.88
Typing Is a Ball, Charlie Brown\$6.88
SEGA
Congo Bongo (R)\$6.88
Super Zaxxon (R)\$6.88
SSI
Computer Baseball\$9.88
Computer Quarterback\$9.88
Fifty Mission Crush\$9.88
Gemstone Warrior\$9.88

THUNDER MOUNTAIN

Top Gun™ puts you in the fighter pilots seat of a technologically advanced F-14 Tomcat.



Top Gun™
Our Discount Price \$6.88

Germany 1985\$9.88
Questron\$9.88
Six-Gun Shootout\$9.88
Wings of War\$9.88
SHARE DATA
Family Feud\$8.88
Jeopardy\$8.88
Wheel of Fortune\$8.88
SPECTRUM HOLOBYTE
Gato\$9.88
SPINNAKER
All in the Color Cave\$4.88
Bubble Busters\$4.88
Cosmic Combat\$4.88
Fraction Fever\$4.88
Gold Record Race\$4.88
Letter Scrambler\$4.88
Monster Voyage\$4.88
Ranch\$4.88
Story Machine\$4.88
*all above titles on cart.
TELARIUM
Amazon\$9.88
Dragonworld\$9.88
Fahrenheit 451\$9.88
Nine Princes in Amber\$9.88
Perry Mason: Case of Mandarin Murder\$9.88
Rendezvous w/Rama\$9.88

THUNDER MOUNTAIN

Cyrus Chess\$6.88
Demolition Mission\$6.88
Dig Dug\$6.88
Eliminator\$6.88
Equinox\$6.88
Great British Software\$6.88
Leviathan\$6.88
Maxi Golf\$6.88
Mission in Our Solar System\$6.88
Ms. Pac Man\$6.88
Pac Man\$6.88
Paradroid\$6.88
Pole Position\$6.88
Rambot: First Blood Part II\$6.88
Slot Car Racer\$6.88
Top Gun\$6.88
UXB/SPINNAKER
Dark Tower\$6.88
Karate Chop\$6.88
VALUE WARE
Artist\$4.88
Educator\$4.88
Entertainer\$4.88
Home Banker\$4.88
Home Manager\$4.88
Kitchen Manager\$4.88

THUNDER MOUNTAIN

How many veggies can Dig Dug Dig? The arcade classic comes home.



Dig Dug
Our Discount Price \$6.88

THUNDER MOUNTAIN

Ms. Pac Man is more than Pac Man with a bow. All new mazes, bonuses and surprises.



Ms. Pac Man
Our Discount Price \$6.88

P.O. BOX 111327—DEPT. CG—BLAWNOX, PA 15238

*Please Read The Following Ordering Terms & Conditions Carefully Before Placing Your Order: Orders with cashiers check or money order shipped immediately on In stock items! Personal & Company checks, allow 3 weeks clearance. No C.O.D.'s! Shipping: Continental U.S.A.—Orders under \$100 add \$3; free shipping on orders over \$100. AK, HI, FPO, APO add \$5 on all orders. Canada & Puerto Rico add \$10 on all orders. Sorry, no other International orders accepted! PA residents add 6% sales tax on the total amount of order including shipping charges. CUSTOMER SERVICE HOURS: Mon.-Fri. 9 AM-5:30 PM Eastern Time. REASONS FOR CALLING CUSTOMER SERVICE—412-361-5291 (1)Status of order or back order (2)If any merchandise purchased within 60 days from S.D. of A. is defective, please call for a return authorization number. We will not process a return without a return auth. #1 Defective merchandise will be replaced with the same merchandise only. Other returns subject to a 15% restocking charge! After 60 days from your purchase date, please refer to the warranty included with the product purchased & return directly to the manufacturer. Customer service will not accept collect calls or calls on S.D. of A.'s 800# order lines! ORDER LINE HOURS: Mon.-Fri. 9 AM-5:30 PM, SAT 10 AM-4 PM EASTERN TIME. Because this ad had to be written 2-3 mos. before it was published, prices & availability are subject to change! New titles are arriving daily! Please call for more information.

SOFTWARE DISCOUNTERS OF AMERICA

S.D. of A.

For Orders Only—1-800-225-7638

PA Orders—1-800-223-7784

Customer Service 412-361-5291

• Free shipping on orders

over \$100 in continental USA

• No Surcharge for VISA/MasterCard

• Your card is not charged until we ship

ABACUS BOOKS

Anatomy of the 1541...\$14
Anatomy of the C64...\$14
1571 Internals...\$14
GEOS Inside & Out...\$13
GEOS Tricks & Tips...\$13

ABACUS SOFTWARE

Assembler Monitor...\$25
Basic...\$25
Basic 128...\$39
Cad Pak...\$25
Cad Pak 128...\$39
Chart Pak...\$25
Chart Pak 128...\$25
Cobol...\$25
Cobol 128...\$25
PPM...\$25
PPM 128...\$39
Speed Term 64 or 128...\$25
Super C...\$39
Super C 128...\$39
Super Pascal...\$39
Super Pascal 128...\$39
TAS...\$25
TAS 128...\$39

ACCESS

Echelon w/Lip Stik...\$29
Famous Course Disk #1
for World Class L.B...\$14
Famous Course Disk #2
for World Class L.B...\$14
Famous Course Disk #3
for World Class L.B...\$14
Leader Board (Original)
3 Pack...\$14
Lip Stik Plus...\$17
Tenth Frame...\$25
Triple Pack: BH1, BH2,
Raid Over Moscow...\$14
World Class
Leader Board...\$25

ACCOLADE

Ace of Aces...\$19
Apollo 18: Mission
to the Moon...\$19
Comics...\$19
4th & Inches Football...\$19
Hardball...\$19
Mini Putt...\$19
Test Drive...\$19
ACTION SOFT

ACTIVISION

Thunder Chopper...\$19
Up Periscope!...\$19
Aliens...\$23
Gamemaker w/Sports &
Science Fiction Disks...\$33
Gee Bee Air Rally...\$19
Hacker 2...\$23
Maniac Mansion...\$23
Might & Magic...\$25
Music Studio...\$23
Postcards...\$16
Shanghai...\$19
The Last Ninja...\$23
Transformers...\$19

AMERICAN EDUCATIONAL

Biology...\$12
Grammar...\$12
Learn to Read (Gr. 1-4)...\$25
Phonics (K-3)...\$25
Reading Comprehension...\$25
Science: Grades 3/4...\$12
Science: Grades 5/6...\$12
Science: Grades 7/8...\$12
US Geography...\$12
US History...\$12
World Geography...\$12
World History...\$12

ARTWORK

Bridge 5.0...\$19
Cycle Knight...\$14
International Hockey...\$14
Linkword French...\$16
Linkword German...\$16
Linkword Russian...\$16
Linkword Spanish...\$16
Strip Poker...\$21
Data Disk #1 Female...\$14
Data Disk #2 Male...\$14
Data Disk #3 Female...\$14

AVALON HILL

Dark Horn...\$19
Gulf Strike...\$19
NBA Basketball...\$25
Spitfire '40...\$23
Super Sunday...\$21
SBS 1985 Team Disk...\$14
SBS 1986 Team Disk...\$14
SBS Gen. Mgr. Disk...\$19

BATTERIES INCLUDED

Paperclip 3...\$33
BLAZINGVILLE

Blazing Paddles...\$23
Rainy Day Games...\$19
Video Vegas...\$19
BERKELEY SOFTWARE

BERKELEY SOFTWARE

Geos 128...\$44
Geo-Calc 128...\$44
Geo-Dex/Desk Pack 128...\$44
Geo-File 128...\$44
Geo-Write Workshop 128...\$44
Geos 64...\$39
*Geo-Calc...\$33
*Geo-File...\$33
*Geo-Font Pak 2...\$19
*Geo-Programmer...\$44
*Geo-Publisher...\$44
*Geo-Spell...\$19
*Geo-Write Workshop...\$33

BETTER WORKING

Business Form Shop...\$25

BRODERBUND

Carmen Sandiego:
USA...\$25
World...\$23
Cauldron 1 & 2...\$19
Magnum...\$19
Print Shop...\$26
P.S. Companion...\$23
P.S. Graphics Library
#1, #2, or #3...\$16 Ea.
P.S. Graphics Library
Holiday Edition...\$16
P.S. Paper Pack...\$14
Super Bike Challenge...\$14
Toy Shop...\$19

CAPCOM

Ghosts & Goblins...\$19
Gunsmoke...\$19
Side Arms...\$19
Speed Rumbler...\$19
CBS

Success w/Algebra:

Binomial Multiplication
& Factoring...\$19
First Degree & Advanced
Linear Equations...\$19
Graphing Linear
Functions...\$19
Simultaneous &
Quadratic Equations...\$19
Success w/Math:
Addition & Subt...\$19
Decimals: Add. & Subt...\$19
Decimals: Mult. & Div...\$19
Fractions: Add. & Subt...\$19

Fractions: Mult. & Div.

Multiplication &
Division...\$19

CMS

General Acct. 128...\$119
Inventory 128...\$49

DATA EAST

Breakthru...\$19
Commando...\$14
Ikari Warriors...\$19
Kid Niki...\$19
Speed Buggy...\$19
Tag Team Wrestling...\$23
Victory Road...\$19

DATASOFT

Alternate Reality:
Dungeon...\$26
Dark Lord...\$14
221 B. Baker St...\$21
Theatre Europe...\$19
Tomahawk...\$21
Video Title Shop...\$21

DAVIDSON

Algebra...\$32
Math Blaster...\$32
Speed Reader 2...\$32
Spell It...\$32
Word Attack...\$32

DESIGNWARE

Body Transparent...\$19
European Nations...\$19
Mission Algebra...\$19
Spellcopter...\$19
States & Traits...\$19

DIGITAL SOLUTIONS

Pocket Filer 2...\$33
Pocket Planner 2...\$33
Pocket Writer 2...\$33
*all 3 in 1 Super Pack...\$59

ELECTRONIC DREAMS

Rocky Horror Show...\$14

ELECTRONIC ARTS

Amnesia...\$26
Arctic Fox...\$23
Bard's Tale 1 or 2...\$26 Ea.
Bard's Tale 1 or 2 Hints...\$9 Ea.
Chessmaster 2000...\$26
Chuck Yeager's AFT...\$23
Demon Stalker...\$21
Dragon's Lair...\$19
Earth Orbit Station...\$21
Halls of Montezuma...\$26
Instant Music...\$21
Legacy of Ancients...\$21
Marble Madness...\$21
Monopoly...\$26
Outrageous Pages...\$33
Patton vs. Rommel...\$21
Pegasus...\$21
Rockford...\$21
Scrabble...\$23
Skyfox 2...\$21
Skate or Die...\$21
Star Fleet 1...\$26
Strike Fleet...\$21
World Tour Golf...\$21

EPYX

Boulder Dash...\$16
California Games...\$23
Champ. Wrestling...\$14
Coil Cop...\$16
Create A Calendar...\$19
Destroyer...\$23
Fast Load (R)...\$19.95
Movie Monster...\$14
Omicron Conspiracy...\$23
Rad Warrior...\$16

EPYX

Construction Kit...\$16
California Games...\$23
Champ. Wrestling...\$14
Coil Cop...\$16
Create A Calendar...\$19
Destroyer...\$23
Fast Load (R)...\$19.95
Movie Monster...\$14
Omicron Conspiracy...\$23
Rad Warrior...\$16

Spiderbot

Spy vs. Spy 3:
Arctic Antics...\$16

Street Sports:

Baseball...\$23
Basketball...\$23
Sub Battle Simulator...\$23
Summer Games...\$14
Summer Games 2...\$14
Temple Apshai Trilogy...\$14
Winter Games...\$14
World Games...\$23

FIREBIRD

Elite...\$19
Golden Path...\$19
Guild of Thieves...\$25
Knight Orc...\$25
Starglider...\$25
The Pawn...\$25
The Sentry...\$25
Tracker...\$25

GAMESTAR

Champ. Baseball...\$19
Champ. Basketball...\$23
GFL Ch. Football...\$23
On-Court Tennis...\$19
Star Rank Boxing 2...\$19
Top Fuel Eliminator...\$19

HAYDEN

Sargon 3...\$14
SAT Math...\$14
SAT Verbal...\$14
INTECOM

INTECOM

Beyond Zork...\$29
Border Zone...\$23
Bureaucracy 128...\$23
Hitchhiker's Guide...\$19
Leather Goddesses...\$23
Nord & Bert Couldn't Make
Head or Tail of It...\$23
Plundered Hearts...\$23
Stationfall...\$23
The Lurking Horror...\$23
Trinity 128...\$23
Zork 1...\$23
Zork Trilogy...\$39

INKWELL SYSTEMS

#184 Light Pen...\$42
#170 Deluxe L.P...\$69
Flexidraw 5.5...\$23

Graphics Galleria:

Animals...\$16
Borders & Signs...\$16
Futuristic Encounters...\$16
Holiday Themes...\$16
Maps of the World...\$16

Graphics Integrator 2

INTRACORP

Bumper Sticker Maker...\$33
Business Card Maker...\$33
KONAMI/ACTION CITY

Rush 'n Attack/Vie

Ar Kung Fu...\$19
Yie Ar Kung Fu 2...\$19

MICROLEAGUE

Baseball...\$25
Box Score Stats...\$16
General Manager...\$19
1986 Team Data Disk...\$14
1987 Team Data Disk...\$14
WWF Wrestling...\$19

MICROPROSE

Acrojet...\$16
Airborne Ranger...\$23
Conflict in Vietnam...\$25
Crusade in Europe...\$25
F-15 Strike Eagle...\$23
Gunship...\$23
Kennedy Approach...\$16

Pirates

Project Stealth Fighter...\$25
Silent Service...\$23
Top Gunner...\$16

MINDSCAPE

Bop & Wrestle...\$19
Defender of the Crown...\$23
De Ja Vu...\$23
Gauntlet...\$23
High Roller...\$19
Indoor Sports...\$19
Infiltrator...\$19
Infiltrator 2...\$23

INTO THE EAGLE'S NEST

Living Daylights...\$19
Mutants...\$14
Paperboy...\$23
Perfect Score SAT...\$44
S.D.I...\$19
Super Star

Ice Hockey

Super Star Soccer...\$23
Uchi Mata Judo...\$19
Wizball...\$14
Xevious...\$19

MISC

Bob's Term Pro...\$29
Bob's Term Pro 128...\$39
C.P. Copy 2...\$21
Doodle...\$25
Final Cartridge 3...\$43
Font Master 2...\$29
Font Master 128...\$35
Super Snapshot (R)...\$47
Superbase 64...\$39
Superbase 128...\$44
Superscript 64...\$29
Superscript 128...\$39

ORIGIN

Autoduel...\$32
Moebius...\$25
Ogre...\$19
Ultima 1 or 3...\$25 Ea.
Ultima 4...\$39
Ultima 5...\$39

PROFESSIONAL

Fleet System 2 Plus...\$39
Fleet System 4 128...\$47

SIMON & SCHUSTER

Chem. Lab...\$25
JK Lasser Money Mgr...\$25
Typing Tutor 4...\$25

SIR TECH

Deep Space...\$25
Wizardry: Proving
Grounds...\$25

SOFTWARE SIMULATIONS

Football...\$19
Pure Stat Baseball...\$25
Pure Stat College
Basketball...\$25

*Data Disks Avail. Call

SPRINGBOARD

Certificate Maker...\$25
C.M. Library Vol. 1...\$19
Newsroom...\$32
N.R. Clip Art Vol. 1...\$19
N.R. Clip Art Vol. 2...\$25
N.R. Clip Art Vol. 3...\$19
P.S. Graphics Expander...\$23
SSI

Battle of Antietam

Battle of Antietam...\$32
Battle Cruiser...\$37
Battle Group...\$37
B-24...\$23
Eternal Dagger...\$25
Gettysburg...\$37
Kampfgruppe...\$37
Phantasia 1, 2 or 3...\$25 Ea.

President Elect 1988

Realms of Darkness...\$25
Rings of Zilfin...\$25
Roadwar 2000...\$25
Roadway Europa...\$25
Shard of Spring...\$25
Shiloh: Grant's Trial...\$25
Sons of Liberty...\$23
War Game Const. Set...\$19
War in S. Pacific...\$37
Warship...\$37
Wizard's Crown...\$25

SUBLOGIC

Flight Simulator 2...\$32
F.S. Scenery Disks...\$19
J.E.T. Scenery Disks...\$26
Stealth Mission...\$32

THREE SIXTY

Dark Castle...\$23

TIMETWORKS

Accts. Payable...\$33
Accts. Receivable...\$33
Uchi Mata Judo...\$19
Data Manager 128...\$33
Desktop Publisher...\$33
General Ledger...\$33
Partner 64 (R)...\$33
Partner 128 (R)...\$39
*Swiftcalc/Sideways (D)...\$19
Swiftcalc/Sideways 128...\$33
Swift Tax '87...\$33
Sylvia Porter's Personal
Fin. Planner 64...\$33
Sylvia Porter's Personal
Fin. Planner 128...\$39
*Word Writer 3...\$33
Word Writer 128...\$33
*All 3 titles in 1 Pk...\$59

UNICORN

Decimal Dungeon...\$19
Fraction Action...\$19
Percentage Panic...\$19
Race Car Rhythmic...\$19
Ten Little Robots...\$19

UNISON WORLD

Art Gallery 1 or 2...\$16 Ea.
Art Gallery: Fantasy...\$16
Print Master Plus...\$23

WEEKLY READER

Stickybear Series:
ABC's...\$16
Math 1 or 2...\$16 Ea.
Numbers...\$16
Opposites...\$16
Reading...\$16
Shapes...\$16
Spellgrabber...\$16
Typing...\$16

ACCESSORIES

Animation Station...\$49
Bonus SS, DD...\$4.99 Bx.
Bonus DS, DD...\$5.99 Bx.
Compuserve Starter Kit...\$19
Contriver Mouse...\$39
Disk (Case (Holds 75))...\$6.88
Disk Drive Cleaner...\$6.88
Dow Jones News Retrieval
Membership Kit...\$14
Epyx 500 XJ Joystick...\$14
Icontroller...\$14
Suncom TAC 2 J.S...\$9
Suncom TAC 5 J.S...\$14
Wico Bat Handle...\$17
Wico Boss...\$12
Wico Three-Way...\$19.95
XETEC Super Graphix...\$59
XETEC Super Graphix Jr...\$39

*All programs on disk

unless otherwise noted!

P.O. BOX 111327—DEPT. CG—BLAWNOX, PA 15238

*Please Read The Following Ordering Terms & Conditions Carefully Before Placing Your Order: Orders with cashiers check or money order shipped immediately on in stock items. Personal & Company checks, allow 3 weeks clearance. No C.O.D.'s! Shipping: Continental U.S.A.—Orders under \$100 add \$3; free shipping on orders over \$100. AK, HI, FPO, APO—add \$5 on all orders. Canada & Puerto Rico—add \$10 on all orders. Sorry, no other International orders accepted! PA residents add 6% sales tax on the total amount of order including shipping charges! CUSTOMER SERVICE HOURS: Mon-Fri. 9 AM-5:30 PM Eastern time. REASONS FOR CALLING CUSTOMER SERVICE—412-361-5291 (1) Status of order or back order (2) if any merchandise purchased within 60 days from S.D. of A. is defective, please call for a return authorization number. We will not process a return without a return auth. #1 Defective merchandise will be replaced with the same merchandise only. Other returns subject to a 15% restocking charge! After 60 days from your purchase date, please refer to the warranty included with the product purchased & return directly to the manufacturer. Customer service will not accept collect calls or calls on S.D. of A.'s 800# order lines! ORDER LINE HOURS: Mon-Fri. 9 AM-5:30 PM, Sat. 10 AM-4 PM EASTERN TIME. Because this ad had to be written 2-3 mos. before it was published, prices & availability are subject to change! New titles are arriving daily! Please call for more information!

MISC

- Most Cables.....\$15
- Casio CZ 700.....\$275
- Casio CZ 101.....\$250
- Digiview Stand.....\$55
- AB Switch.....\$30
- Mouse Pad.....\$6
- Time Saver.....\$80
- 256K Buffer (64/128).....\$80

commodore

**5 MEG
Hard Drives
9060**

\$299⁹⁵
REFURBISHED



commodore

Educator 64

\$124⁹⁵*

Completely
Commodore Compatible
REFURBISHED

FULL 90 DAY WARR.



ACCESS

- DISK CASE (75).....6.95
- DISK FILE (120).....9.95
- DISK NOTCHER.....4.95
- 3 1/2 DATA CASE (30).....7.95
- TEAK 5 1/4 DISK HOLDER (50).....18.00
- SURGE SUPPRESSOR STRIP.....14.95
- TEAK 3 1/4 DISK HOLDER (30).....18.00
- DISK HEAD CLNR.....8.00
- EPYX JOYSTICK (64/128).....14.95

AMSTRAD

PC1512

\$479⁹⁵*

*with any
monitor
purchase



SYSTEM INCLUDES:

- 512K
- CGA Card
- 360K DOUBLE SIDED Drive
- 8086 (8 MHZ)
- Mouse
- Parallel & Serial Port
- Joystick Port
- Tilt Mon. Stand
- XT Style Keyboard
- Quartz Clock

FREE SOFTWARE!

(500.00 Value)

- DOS 3.2 ● GEM Desktop
- GEM Paint ● GEM Doodle
- Basic 2

ALL

**IBM SOFTWARE
40% OFF!**

SEAGATE W/Controller
20 MEG*275* 30 MEG*315*
*Package Pricing

- Zucker Boards.....\$Call
- 1.2 MEG Drives....\$119⁹⁵
- Multi Function Cards....\$Call



PRINTERS

- NX10.....\$149⁹⁵
- NX10C.....\$159⁹⁵
- NB2410.....\$379⁹⁵
- NR15.....\$419⁹⁵
- NX15.....\$279⁹⁵
- Powertype.....\$159⁹⁵
- NX 1000.....\$179⁹⁵

NP10's \$125⁰⁰

W/2 Ribbon Purchase

AMIGA NEW RELEASES

- Bard's Tale.....\$26.00
- Bard's Tale II.....26.00
- Chessmaster 2000.....26.00
- World Tour Golf.....20.00
- Marble Madness.....20.00
- Pegasus.....20.00
- Murder Party.....23.00
- Scrabble.....23.00
- America's Cup.....23.00
- Artic Fox.....26.00
- All Classics.....11.00
- Amnesia.....26.00
- Bismark.....23.00
- Chuck Yeager.....23.00
- Tobruk.....23.00
- Paper Clip III.....32.00
- Outrageous Pages.....32.00
- Clue Books.....\$CALL
- Dan Dare.....14.00
- Earth Orbit Station.....20.00

MINDSCAPE

- Defender of the Crown.....\$21.00
- Bop and Wrestle.....18.00
- Super Star Hockey.....21.00
- High Roller.....18.00
- Indoor Sports.....18.00
- Infiltrator.....18.00
- Parallax.....18.00
- Unidom.....18.00
- Super Star Soccer.....21.00

- Fast Hackem.....25.00
- Kracker Jax.....\$5Save

ACCOLADE

- Hard Ball.....\$17.00
- Apollo.....\$18.00
- Test Drive.....\$18.00
- Ace of Aces.....18.00
- Comics.....18.00
- Mini-Putt.....18.00
- Fourth and Inches.....18.00

- Jeopardy.....\$9.95
- Wheel of Fortune.....each
- Family Feud.....each

AMIGA NEW RELEASES

- Arkoids.....\$ 30
- Test Drive.....\$ 37
- Ferrari Formula One.....\$ 30
- Super Base Professional.....\$180
- Digipaint 2.0.....\$ 36
- Dark Castle.....\$ 24
- Echelon.....\$ 30
- Gold Runner.....\$ 24
- Silver.....\$108
- Hollywood Poker.....\$ 24
- Deluxe Print II.....\$ 48
- Word Perfect.....\$200
- The Works.....\$120
- Empire.....\$ 32
- Studio Magic.....\$Call
- Pixmate.....\$ 42
- Kind Words.....\$ 60
- Page Flipper.....\$ 30
- Videoscape 3D.....\$120
- Intro Cad.....\$148

Berkeley Softworks

- GEOS.....\$36.00
- Fontpak 1.....18.00
- Desk Pack.....21.00
- Writer Work Shop.....30.00
- Geodex.....24.00
- GeoCalc/GeoFile.....each 30.00
- GeoCalc.....30.00
- GEOS 128.....42.00
- Geopublish.....42.00
- Geoprogrammer.....\$CALL

Abacus

- GEOS Tricks and Tips.....9.00
- Abacus Books.....\$SAVE
- GEOS In and Out (Disk).....9.00
- Basic 128.....36.00
- Basic 64.....24.00
- Cadpak 128.....36.00
- Cadpak 64.....24.00
- Charpak 128.....24.00
- Charpak 64.....24.00
- Cobol 64.....24.00
- Cobol 128.....36.00
- Super C Compiler 64/128.....36.00
- Super Pascal.....36.00

ACCESS

- MACH-128.....\$30.00
- Leaderboard.....27.00
- Echelon.....27.00
- World Class Leaderboard.....24.00
- 10th Frame.....24.00
- Exec Tournament.....12.00
- Tournament 1.....12.00
- Famous Course.....12.00

ACTIVISION

- Portal.....\$24.00
- Titanic.....18.00
- Echelon.....21.00
- Liberty.....21.00
- Aliens.....21.00
- Last Ninja.....21.00
- Hacker II.....21.00
- Top Fuel Elim.....\$CALL
- Game Maker.....24.00
- Music Studio.....18.00
- Maniac Mansion.....\$21.00

SPRINGBOARD

- Certificate Maker.....\$30.00
- Newsroom.....30.00
- Clip Art 1.....18.00
- Clip Art 2.....24.00
- Knight Ork.....\$24.00
- Golden Path.....\$CALL
- Pawn.....24.00
- Talking Teacher.....24.00
- Guild of Thieves.....24.00

UNISON WORLD

- Art Gallery.....\$16.00
- Art Gallery 2.....16.00
- Print Master.....21.00

EPYX

- Fast Load.....\$24.00
- Rad Warrior.....\$CALL
- Street Sports.....each 24.00
- Baseball/Basketball.....15.00
- World Karate Champ.....20.00
- Summer Games II.....20.00
- Super Cycle.....24.00
- World Games.....24.00
- Football.....20.00
- Multi-Plan.....24.00
- Winter Games.....20.00
- Sub Battle.....24.00
- California Games.....24.00
- Boulder Dash Construction.....\$CALL
- Spy vs. Spy III.....\$CALL

Broderbund Software

- Printshop.....\$25.00
- Graphics Lib.....15.00
- Karaoke.....21.00
- Print shop comp.....18.00
- Origin Titles.....\$Call
- Flight Sim II.....\$28.50
- Scenery Disk.....12.00
- Jet.....30.00
- Football.....24.00
- Baseball.....30.00
- Thunder Chopper.....\$20.00

TIMEWORKS

- Data Mgr. 128.....\$36.00
- Swiftcalc 128.....36.00
- Wordwriter 3.....30.00
- All business titles.....36.00
- Partner 64.....36.00
- Partner 128.....42.00
- Sylvia Porters.....36.00
- Desktop Publisher.....\$CALL

MicroProse

- Gunship.....\$21.00
- F-15.....21.00
- Project Stealth Fighter.....24.00
- Airborne Ranger.....24.00
- Silent Service.....24.00
- Pirates.....24.00
- Top Gunner.....18.00

Astec, Inc

- Font Master II 64.....\$30.00
- Font Master 128 W/Spell.....42.00

SSI

- Gemstone Healer.....\$18.00
- Gettysburg.....36.00
- Kampfgruppe.....36.00
- Phantasia 2.....24.00
- Ring of Zeln.....24.00
- Road War 2000.....24.00
- Shard of Spring.....24.00
- Wizard's Crown.....24.00

HOPE

- Micro L. Baseball.....\$24.00
- General Mgr.....24.00
- Stat Disk.....15.00
- 86 Team Disk.....12.00

subLOGIC

- Super Pack 128.....45.00
- Pocket Writer 2/Writer Planner.....36.00
- Super Pack 2 (128).....60.00
- Pocket Writer 128/Writer Planner.....30.00
- Pocket Writer 64/Writer Planner.....24.00

PRACTICAL PERIPHERALS

- Superbase 128.....\$60.00
- Superbase 64.....48.00
- Superscript 128.....48.00
- Superscript 128.....48.00
- Visastar 64.....54.00
- Visastar 128.....54.00
- Microlawyer.....36.00

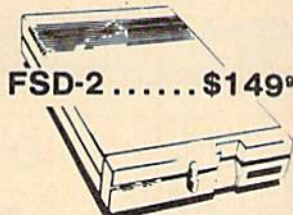
NEW RELEASES

- Infiltrator II.....\$21.00
- Clue Books.....\$CALL
- Air Ralley.....18.00
- Dungeon Runners.....18.00
- Instant Music.....18.00
- Legacy of Ancient.....18.00
- Patton vs. Rommel.....18.00
- Skate or Die.....18.00
- Tomahawk.....18.00
- Monopoly.....26.00
- Beyond Zork.....\$CALL
- King of Chicago.....30.00
- Gauntlet.....18.00
- NBA.....\$CALL
- Paper Boy.....18.00
- Nord and Bert.....21.00
- Mousetrap.....12.00
- Business Card Maker.....30.00
- Fivious.....18.00
- Fixdraw.....50.00
- Desk Pack 128.....\$CALL
- Geopell.....18.00
- Geocalc 128.....\$CALL
- Geofile 128.....\$CALL
- Car Sign Designer.....21.00
- Gowrite 128.....42.00
- Skarfire.....21.00
- Ultima V.....\$CALL
- Microleague Wrestling.....\$CALL
- Wizardry.....\$CALL
- Swift Tax.....\$CALL
- Outrageous Pages.....\$CALL
- Strike Fleet.....\$CALL
- Geoprogrammer.....\$CALL
- Final Cartridge.....\$CALL
- Top Fuel Challenge.....\$CALL
- Paper Clip III.....\$CALL

commodore

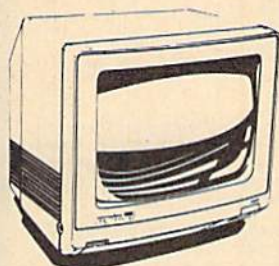


64C \$129⁹⁵*
128 \$189⁹⁵*
128D \$429⁹⁵*
C64 \$99⁹⁵*
*Refurbished
*package pricing



FSD-2 \$149⁹⁵

1541-II \$Call
1581 \$179⁹⁵
1541c \$169⁹⁵
1571 \$219⁹⁵



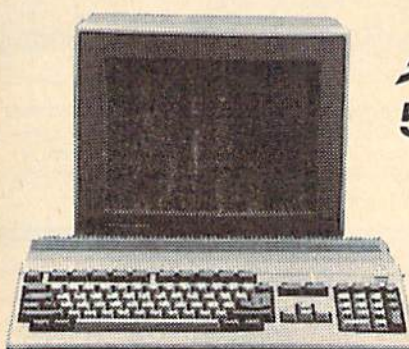
1802c \$189⁹⁵
1084 \$Call
MAGNAVOX 8562 ... \$240



1670 \$Call
OKIMATE 20 ... \$99⁹⁵*
1351 \$34⁹⁵
Plug & Print \$Call
Device One Interface
w/16K Buffer ... \$59⁹⁵
1764 RAM ... \$120⁰⁰
*W/Plug & Print Purchase

AMIGA 100 (refurbished)... \$499.95

COMMODORE
AMIGA
500/2000
**SPECIAL
PROMO**



AMIGA 2000 C
• 2 MEG RAM
• BRIDGE CARD
• HARD DRIVES

1 MEG DAM for A500 \$299.95

GENLOCK \$200⁰⁰
1010 Drive \$200⁰⁰

DIGI-VIEW \$130

3 1/2 Drive ... \$180⁰⁰
40 MEG ... \$950⁰⁰

1680 MODEM \$120⁰⁰
1084 \$Call

512K RAM \$120

2 MEG ... \$Call
20 MEG ... \$649⁹⁵

DIGI-VIEW
Camera w/lens \$200

Sidecar \$700⁰⁰
256K \$69⁹⁵

MARAUDER II ... \$24

Insider
1 Meg \$280⁰⁰

AUTHORIZED AMIGA SALES & SERVICE
64/AMIGA EMULATORS ... from \$39⁹⁵

MODEMS

SUPRA
Hayes Compatible
External

2400 ... \$159⁹⁵*

KISS
ENGINEERING
2400 INTERNAL ... \$149⁹⁵

Avatex

1200 Baud ... \$79⁹⁵*
1200 Internal ... \$99⁹⁵
1200 H.C. ... \$99⁹⁵*
2400 Baud ... \$179⁹⁵*
*W/Cable Purchase

ALPS - 18 PIN
240CPS • COLOR

\$399⁹⁵



1 Year Warranty
EPSON/IBM COMP.
100 CPS L.Q.

**FREE
TRACTOR
FEED**

SFD 1001
1 MEGA FROM
BYTE \$99⁹⁵*



*Refurbished
• IEEE CABLES • VIC SWITCHES
• IEEE INTERFACES from 79.95
• PARALLEL TO IEEE INTERFACE \$Call

commodore PC101
IBM Compatible



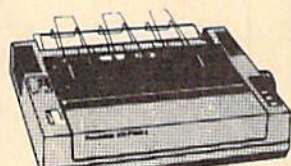
• 512K
• 350K Dual
Sided Drive
• CGA Board
• One year
warranty
• Parallel Port
• Serial Port
• GW BASIC
• DOS 3.2

FREE
Sidekick \$499⁹⁵*
by Borland *W/Monitor Purchase

COMMODORE

• 3 SPEED TURBO
• PC-AT
CALL!

Panasonic
Industrial Company
One Panasonic Way Secaucus New Jersey 07094



Limited Quantities!

1080i-II \$160*
1091i-II \$180*
1092i \$280*
1592i-II \$380*
1524i-II \$520*
*W/2 Ribbon Purchase

FREE-TRIAL OFFER!

HIGH QUALITY DS/DD
DISKETTES

19¢ each

Lifetime Warranty
100% Certified W/Sleeves
Limit One (10) Pack Per Customer

SEIKOSHA



• 2 Year Warr.
*W/2 Ribbon Purch

SP1000VC \$149⁰⁰*
SP1200AI \$154⁰⁰*
MP1300 (300 CPS) \$275⁰⁰*
LASER \$Call
SL80A I (24 pin) ... \$280⁰⁰*

DISKS

3 1/2 DS/DD GENERIC \$1.30
3 1/2 DS/DD \$1.80
SONY-FUJI-MAXWELL-VERBATIM

5 1/4 DS/DD GENERAL (100 Lot) ... 30¢
5 1/4 DS/DD (50 Lot) ... 60¢
BASF • NASHUA

ORDERS **800-433-7756**

ONLY IN MICH. 313-427-7713 M-F

FAX: 313-427-7766 10-6

CUSTOMER SERVICE **313-427-0267**

Monday thru Friday — 10:00 A.M. to 8:00 P.M.
Saturday — 10:00 A.M. to 6:00 P.M. (E.S.T.)

SCHOOL P.O.'s ACCEPTED CALL FOR TERMS

M.C.S.

MICROCOMPUTER SERVICES

DEALER INQUIRES INVITED

No Surcharge for MC/VISA/DISCOVER
All returns must have RA#. Merchandise found defective will be repaired or replaced. We do not offer refunds for defective products or for products that do not perform satisfactorily. We make no guarantees for product performance. Any money back guarantee must be handled directly with the manufacturer. Call for shipping & handling info. Prices subject to change without notice.
12864 FARMINGTON ROAD, LIVONIA, MI 48150
We cannot guarantee compatibility.

LET'S FACE IT—MAIL ORDER HOUSES ARE NOT ALL THE SAME!

SOFTWARE SUPPORT INTERNATIONAL

CONVENIENCE—FAST SERVICE—RELIABILITY—SUPPORT

Hands On Software, Inc. is now distributing its own products. "What does that mean to me," you say! Well, for one thing, we have expanded our product line to include games and utilities from other publishers, accessories, Commodore authorized service, and even a selection of pre-owned titles. The technical staff here is second to none, and is well-known to thousands of Commodore users. We are committed to your satisfaction—and are prepared to prove it!

5 1/4" Disk Drive Cleaner	5.95	10 Cnt. Disk Storage	1.95
3 1/2" Disk Drive Cleaner	6.95	50 Cnt. Disk Storage	8.95
1541/71/MSD Power Cord	4.95	100 Cnt./Lock Disk Storage	12.95
C-64 Color Monitor Cord	4.95	Disk Notcher	4.95
1541 6" Drive Cable	4.95	3 1/2" DS/DD Diskettes	1.29
6 Outlet Surge Protector	16.95	5 1/4" Black Diskettes DS/DD	.49
C-64 Repairable Power Supply	39.95	5 1/4" Color Diskettes DS/DD	.79
Aprospan 64	27.95	100 Cnt. Write Protects	1.00
12" Printer Stand (Wire)	8.95	96 Cnt. Labels	1.00
1351 Mouse	37.95	Tyvek Sleeves	.09
Mouse Mat	9.95	Slit Stick	6.95
41/71/64/128 Dust Cover	8.95	Quick Shot II	7.95
1581 Disk Drive	204.95	Tac 2	10.95
White Diskette Mailer	.49	Tac 3	11.95

Commodore Authorized Service by Russell & Associates

Repairs:		Service:	
C-64 Keyboard	54.95	C-128 Rom Upgrade	42.50
C-128 Keyboard	79.95	1571 Rom Upgrade	19.95
1541 Align	39.95	C-128 64K Ram Video	19.95
1541 Repair (w/align)	65.00	(great for Basic 8)	
1571 Align	39.95		
1571 Repair (w/align)	89.95		
1702 Monitors	75.00		
1902 Monitors	85.00		
Commodore Printers	85.00		
Amiga—Call for Prices			

All C-64's & C-128's must have Power Supply included. Thirty-day warranty on all repairs. Buy a Power Supply from Software Support International and get a 60-day warranty. Please include a detailed description of your problem and try to isolate it if possible.

Russell and Associates reserves the right to refuse any repair. Repair jobs will be charged \$3.00 per piece for return shipping/handling.

Abacus Software

Basic Compiler 64	26.88
Basic Compiler 128	39.84
Cad Pak 64	26.88
Cad Pak 128	39.84
Chart Pak 64	26.88
Chart Pak 128	26.88
Geos Tricks & Tips Disk	10.68
Geos Tricks & Tips Book	11.98

ACCESS

Echelon	30.12
Mach 128	32.36
Tenth Frame	26.88
Triple Pak	13.92
World Class Leader Board	26.88
W/C Leader Board Famous Courses #1	13.92
W/C Leader Board Famous Courses #2	13.92
LB & Toun I & Exec I	13.92

ACCOLADE

Ace of Aces	20.40
Apollo 18	20.40
Comics	20.40
Fourth & Inches	20.40
Hardball	20.40
Killed Until Dead	20.40
Miniputt	20.40
Test Drive	20.40

ACTIONSOF

Thunder Chopper	20.40
Up Periscope	20.40

ACTIVISION

Aliens	22.64
Gee Bee Air Rally	20.40
I Am C 64	20.40
I Am C 128	22.64
Labyrinth	20.40
Maniac Mansion	22.64
Might & Magic	26.88
Music Studio	22.64
Portal	26.88
Postcards	16.16
Shanghai	20.40
The Last Ninja	20.40

Softworks

Desk Pak I	22.64
Font Pak	20.40
Geos 64	39.95
Geos 128	45.95

Softworks

Geocalc	32.95
Geodex	26.88
Geofile	32.95
Geopublish 64	39.95
Geopublish 128	45.95
Geospell	20.40
Writer's Workshop 64	32.95
Writer's Workshop 128	45.95

Broderbund Software

Carmen Sandiego USA	26.88
Carmen Sandiego World	22.64
Cauldron 1 & 2	20.40
Print Shop	29.95
Print Shop Companion	22.95
P/S Graphics Library	15.95
1 or 2 or 3	
P/S Holiday Graphics	16.16
Super Bike Challenge	13.92

CAPCOM

Ghost 'N Goblins	20.40
Side Arms	20.40
1942	20.40



Breakthru	20.40
Commando	13.92
Ikari Warriors	Call
Kid Niki	Call
Speed Buggy	20.40
Tag Team Wrestling	22.64

DATA SOFT

Alternate Reality: City	22.06
Alternate Reality: Dungeon	28.81
Force 7	14.97
Tomahawk	22.06
Video Title Shop	22.06



Digital Super Pak	64.95
Pocket Filer 2	39.95
Pocket Planner 2	39.95
Pocket Writer 2	39.95



Amnesia	28.81
Artic Fox	24.22
Bard's Tale 1 or 2	28.81
Chessmaster 2000	28.81
Chuck Yeager's AFS	25.30
Dan Dare	14.77



ELECTRONIC ARTS

Delta Patrol	14.97
Demon Stalker	22.06
Dragon's Lair	18.82
Earth Orbit Station	22.06
Instant Music	25.30
Legacy of Ancients	22.06
Marble Madness	22.06
Outrageous Pages	35.56
Paperclip 3	35.56
Pegasus	22.06
Sanxion	14.97
Skate or Die	22.06
World Tour Golf	22.06



Apshai Trilogy	13.92
California Games	26.88
Champ. Wrestling	26.88
Coil Cop	17.16
Create a Calendar	20.40
Destroyer	26.88
Graphics Scrapbook	10.68
1 or 2 or 3	
Rad Warrior	16.16
Spiderbot	17.16
Spy vs. Spy 3	17.16
Street Sports: Baseball	26.88
Street Sports: Basketball	26.88
Sub Battle Simulator	26.88
Summer Games I	13.92
Summer Games II	26.88
Super Cycle	13.92
Winter Games	26.88
World Games	26.88



Elite	22.56
Elite Hint Book	6.15
Guild of Thieves	26.88
Knight Orc	26.88
Revs I	Call
Star Glider	26.88
Talking Teacher	24.29
The Pawn	26.88
The Sentry	26.88
Tracker	26.88



Champ. Baseball	20.40
Champ. Basketball	22.64
GFL Football	22.64
Star Rank Boxing	20.40
Top Fuel Eliminator	20.40



Acro Jet	16.16
Airborne Ranger	22.64
F-15 Strike Eagle	22.64
Gunship	22.64
Pirates	26.88
Project Stealth Fighter	26.88
Silent Service	22.64
Top Gunner	16.16



Bop & Rumble	20.40
Bop & Wrestle	20.40
Crossword Magic	33.36
Defender of the Crown	22.64
Deja Vu	23.64
Gauntlet	22.64
Head Over Heals	13.92
High Roller	20.40
Indoor Sports	20.40
Infiltrator	20.40
Infiltrator II	22.64
Into Eagles Nest	20.40
Mutants	13.92
Paperboy	22.64
Super Star Ice Hockey	22.64
Super Star Soccer	23.64
Wizball	13.92
Xevious	20.40

ORIGIN

Autoduel	13.36
Moebius	26.88
Ogre	20.40
Ultima 1	26.88
Ultima 3	26.88
Ultima 4	39.84
Ultima 5	Call

Professional Software Inc.

Fleet Filer	26.88
Fleet System 2+	39.84
Fleet System 3	46.32
Fleet System 4	52.80

SPRINGBOARD

Certificate Maker	26.88
Certificate Maker Library I	20.40
Newsroom	32.95
N/R Clip Art 1	20.40
N/R Clip Art 2	26.88
N/R Clip Art 3	20.40
P/S Graphic Expander	22.64

subLOGIC

Flight Simulator II	35.56
Flight Simulator Scenery	
Disks 1-6	14.77 ea.
Flight Simulator Scenery	
Disk 7	18.01
Jet	27.96

TIMEWORKS

Data Manager 2	16.16
Data Manager 128	33.36
Desktop Publisher	Call
General Ledger	33.36
Partner 64	33.36
Partner 128	39.84
Swiftcalc/Sideways 64	16.16
Swiftcalc/Sideways 128	33.36
Sylvia Porter's Finc.	
Planner 64	33.36
Sylvia Porter's Finc.	
Planner 128	46.32
Word Writer 3	33.36
Word Writer 128	33.36

UNION WORLD INCORPORATED

Art Gallery 1 or 2	16.16
Art Gallery Fantasy	16.16
Printmaster Plus	22.95

MISCELLANEOUS

Basic 8	29.95
Basic 8 Guide for Beginners	19.95
Bob's Pro Term 64	33.36
Bob's Pro Term 128	39.84
B/W Business Form Shop	26.88
CSM 1541 Drive Alignment Kit	30.12
CSM Software Protection	
Manual I	22.55
CSM Software Protection	
Manual II	26.15
Doodle	26.88
Font Master II	32.95
Font Master 128	39.95
JK Lasser Money Manager	46.32
Ms. Pac Man	6.79
Hes Mon 64 (Cart.)	9.95
Strider's Music Disks 1-10	6.95 ea.
Strip Poker	20.40
Strip Poker Data Disk	13.92
1 or 2 or 3	
Superbase 64	39.84
Superbase 128	46.32
Super Sunday	23.64
Superscript 64	33.36
Superscript 128	39.84

MANY OTHER TITLES AVAILABLE—CALL FOR PRICES!

Here they are! The products that have made us one of the most respected companies in the mail order business. Our utilities have become a staple in the libraries of thousands upon thousands of Commodore users worldwide. Original ideas and workmanship throughout, (a rarity nowadays!) our products are guaranteed to please. If you enjoy dealing with people who genuinely have your best interest at heart, look no further. Our products are created with you in mind. We offer programs that are protection free and most can be transferred to the 1581 disk drive. Also, we offer the best technical support in the business. Les and Dan are available five days a week to help with problems. If you see a program that interests you on this page, and you need more detailed information to make an educated decision, just write or call for our free catalog. Remember: Our Business is SOFTWARE SUPPORT!

Kracker Jax

THE REVOLUTIONARY ARCHIVAL SYSTEM!

Kracker Jax is the powerful parameter-based copying system that has taken the country by storm! What is a parameter? It's a custom program that allows your 1541 or 1571 disk drive to strip ALL copy protection from your expensive software, leaving you with UNPROTECTED, TOTALLY BROKEN BACKUPS that can even be copied with a simple fast copier!

We declare **Kracker Jax** to be the best system of its kind on the market today! A bold claim? Maybe.

But don't take our word for it—if you want the REAL story on how good **Kracker Jax** is, just ask one of our customers. Don't worry. You won't have any problem finding one.

■ Easy to use—no special knowledge is required! ■ Powerful—will easily back up titles that nibblers can't! ■ Superfast—strips protection in a matter of seconds! ■ Great value—each volume has approx. 100 parameters! ■ Current—We lead the copy market.

We've finally done it!
You asked us to discount our earlier
volumes, and we have!

Vols 1-2-3-4 Only \$9.95 ea.
Vols 5-6-7 Still Only \$19.95 ea.

C-128 Helper

Helper is an exciting new type of Software for the C-128 Computer.

- Screen Based Databasing
- User Definable
- Editor allows modifications
- Demo included that serves as a Basic 7.0 Electronic reference manual
- Screen dumps to printer
- 1581 version available

ONLY \$24.95

Graphic Art Disks

Top quality graphics are hard to find. These will definitely please you.

- 8 Volumes available
- Themes followed in most
- Printmaster™/Printshop™ sda compatible
- Easily transferred to 1581

ONLY \$14.95 per Volume

Elite V3.0

Elite V3 copies the "impossible."
• Copies V2.0 of a popular 64/128 planner, filer (64 only), writer.
• Leaves the Backup protection free.
Why pay for Backups of titles you already own?

ONLY \$6.95

Elite V4.0

Our Elite Series is second to none for its copying capabilities.
• Elite 4 created to copy titles protected to the MAX!
• Special MAX Copier included
• Update policy included
• Free Bonus—The Shotgun I

ONLY \$14.95

Super Cat

The greatest disk library cataloger ever produced for the Commodore 64.

- Catalogs up to 640 Disks w/5000 titles per catalog
- Twice as many with 2 drives
- Load, save, edit, change any entry
- Prints a variety of reports and even labels
- Lightning fast and easy to use!

ONLY \$24.95

Graphic Label Wizard

This is the ultimate label utility.

- Databasing with graphics included
- Supports Commodore as well as Epson compatible printers
- Printmaster™ Printshop™ Software Solutions™ compatible
- 1581 transferable
- Satisfaction guaranteed!

ONLY \$24.95

Hacker's Utility Kit

State of the art tools for the computerist ready to take control of his software library!

- Whole disk scanners
- GCR Editor
- Fast Data/Nibble copiers
- File tracer
- Byte Pattern Finder

Much, Much More—\$19.95

C-128 Cannon

The total copy/utilities package created just for C128 owners.

- Nibblers
- Fast Copiers
- File Copiers
- Scanners
- 1581 Utilities
- Directory editing
- 100 Free Kracker Jax Pirms
- 1541/71/81 Drives Supported—Single or Dual

ONLY \$34.95

Shotgun II

Without a doubt—the most powerful nibbler on today's market:

- 1541/17 compatible
- One or two Drive modes
- Copies to track 40
- On screen GCR display
- Auto Density Detection
- Copies Rapidlok™ automatically!
- Available in loaded form with 32 of our most popular pirms

Shotgun II ONLY \$14.95
Loaded Shotgun II ONLY \$19.95

Kracker Jax Revealed I & II

Our knowledge of protection schemes has made us famous. Now find out how we do what we do best. Our books are your key to REAL knowledge. OTHERS ONLY GIVE SURFACE INFO—we dig deep—much deeper. We can show you exactly how today's copy protection prevents you from backing up your software.

Revealed Book I with Reset Button
\$23.50

Revealed II with Hesmon Cartridge
\$23.50

The Bull's Eye

Considered by many to be our greatest achievement.

- Rapidlok™ copying capabilities.
- Timeworks™ all purpose copier parameter
- Our famous current Geosbusters
- Other pirms included to copy some of the toughest on the market.

ONLY \$19.95

Geosbusters V3.0

This is our famous system created to defeat the copy/ID protection on your favorite utilities.

- Runs from your desktop
- Simple to operate
- Icon Driven

ONLY \$6.95

Sysres™ Enhanced

The best—and we mean Best Basic enhancement system for the C-64.

- Adds over 25 major commands to Basic
- Extended Super DOS-Wedge
- Scrolling through Basic
- Renumber, Trace, Search, and many other features too numerous to mention
- 1541/71 fast loader included
- M/L monitor from Basic
- Transferable to 1581 Disk

ONLY \$39.95

The best money you'll ever
spend on your Commodore!

SOFTWARE

SUPPORT
INTERNATIONAL

ORDERING is simple: we accept money orders, certified checks, personal checks only on prior approval, VISA, MC, Discover and COD. Please add \$3.00 shipping and handling per order. \$2.00 additional for COD orders. Orders outside of North America please call for shipping charges. Defective items will be replaced at no charge. In stock orders are processed within 24 hrs. Returns are not accepted without authorization #. Washington Residents please add 7.3% sales tax.

Mail your order to: Software Support Int., D13
2700 NE Andresen Road/Vancouver, WA 98661
Phone orders welcome 9 a.m.-5 p.m. Pacific time
(206) 695-1393

Program Submissions Invited
Need more info? Call or write for our free catalog.



DEALERS—WE HAVE THE SUPPORT YOU'RE LOOKING FOR!

ADVANCED DETECTION & CONTROL

NO INTERFACE IS EASIER TO USE

- Control lights, appliances, heating and cooling systems, relays, motors and virtually any electrical device.
- Connect to temperature, light, sound, moisture, fluid level and pressure sensors.
- 32 separate buffered digital output lines.
- 32 separate digital input lines.

BH100 I/O Card
User Manual, instructions, sample programs & diagrams of typical hookups. **\$129**

8 Channel A/D Plug-in Conversion Module \$45
Fast 8 bit 0-5V A/D converter.

Complete I/O Course
Includes BH100, Beginner's Module, Course Manual and User Manual. **\$159**

Security System Module
With siren, switches and software. **\$35**

Beginner's I/O Interface Course Manual \$15
Learn all about interfacing!

Beginner's Module \$25
With 8 LEDs, 8 switches and 1 relay. Requires the BH100.

INTELLIGENT I/O

7 WATER ST. • MASSENA, NY 13662

(315) 769-2716



Call for free brochure today!

Beware of imitations - get the high quality original BH100
Add \$4 for postage and specify C-64 or VIC-20.

FREE CATALOG * FREE CATALOG * FREE CATALOG

PROFESSIONAL HANDICAPPING SYSTEMS™

"COMPUTER SOFTWARE FOR THE SERIOUS HANDICAPPER"

INTRODUCES...

MARKET MAKER®
The Stock Market Analyzer



3-Months of accurate predictions for only
\$69.95

1. Complete stock, option, and index option analysis.
2. Produces easy to read charts, quickly!
3. Charts 100's of stocks on one disk.
4. Six (6) distinct signals
5. Can be linked with Dow Jones® or entered by hand.
6. The easiest, fastest, most accurate stock market analyzer ever used by PROF JONES.



We can handle all of your handicapping needs!
Whether its for Horses, Dogs, Trotters, Lottery, Football or Basketball, we've got it for you!

DEMO DISKS AVAILABLE!

FREE CATALOG

Call Us NOW

TOLL FREE

1-800-553-2256

FREE CATALOG * FREE CATALOG * FREE CATALOG

FACTORY AUTHORIZED COMMODORE REPAIR CENTER

1-800-772-7289

(312) 879-2888 IL

C64 Repair (PCB ONLY) . 42.95	Amiga Repair (PCB ONLY) . 99.95
C128 Repair (PCB ONLY) . 64.95	Amiga Drive Repair . 149.95
1541 Permanent Alignment . 29.95	Printers . CALL
1541 Repair . 79.95	Monitors . CALL
1571 Repair . 79.95	Other Equipment . CALL

**CALL BEFORE SHIPPING
PARTS AND LABOR INCLUDED
FREE RETURN SHIPPING**

(APO, FPO, AIR ADD \$10.00)

24-48 HR. TURNAROUND

(Subject to Parts Availability)

30 DAY WARRANTY ON ALL REPAIRS

COMMODORE PARTS

C-64 Power Supply	34.95
128 Power Supply	59.95
C-64 Over Voltage Sensor	19.95
Other Parts	CALL

(Plus \$3.00 Shipping/Handling)

All parts for Commodore equipment usually in stock

For Parts Call (312) 879-2350

Dealer Discounts Available

TEKTONICS PLUS, INC.

150 HOUSTON STREET
BATAVIA, IL 60510

CLIP AND SAVE



COMPUTER REPAIR

800-221-7770

AMIGA \$100.00		AMIGA \$100.00		AMIGA \$100.00	
	Commodore Disk Drive 1541 2031	\$60.00		Commodore Monitor 1701 1702	\$75.00 *
	Commodore SX-64 Portable Computer	\$99.00 *		PET 64 VIC 20 64 Computers	\$45.00
	Commodore Printer MPS 801 MPS 803	\$50.00		Commodore Printer 1526 MPS 802	\$75.00
	MSD SD1, SD2 CBM 128 CBM 1571	\$85.00		Commodore Computer 8032 8050	\$85.00 *

WE BUY ALIVE		AUTHORIZED COMMODORE SERVICE CENTER		PARTS	
64	60.00	CABLES AND MISC.	901225-01	10.85	
1541 NEWT	75.00		901226-01	10.85	
1541 ALPS	60.00		901227-03	10.85	
SX64	150.00	REG 6 PIN DIN	901229-05	10.85	
MSD	100.00	12' 6 PIN DIN	7701/8701	7.85	
1571	85.00	18' 6 PIN DIN	8721	16.85	
1526/802	45.00	1EEE TO EEE PIG BACK	8502	9.00	
MPS801	35.00	1EEE TO PET PIG BACK	825100	11.85	
SFD 1001	85.00	POWER SUP 64	6502	3.85	
DEAD		WICO BAT HANDLE	6532	6.29	
64	40.00	WICO 3 WAY	6520	3.85	
1541 NEWT	60.00	WICO BOSS	6522	2.95	
1541 ALPS	40.00	MEDIA MATE 5 CASE	6526	8.85	
MSD	75.00	TYMAC CONNECTION	6567	13.85	
SX64	100.00	FUJI DSDO	6581	8.85	
		8050 OR 8032	295.00	6510	8.85
		MUST BE COMPLETE	5.00 SHIPPING	4164	.99
			25.00 MIN ORDER	74LS629	4.95
			15.00 APO AND BUSINESS EQUIPMENT	6560	13.00

TC ELECTRONICS *

HWY 36 PO 1129

HARTSELLE, AL 35640

205-

773-1077

SEND FOR OUR COMPLETE LIST OF PARTS AND SOFTWARE

Mon-Fri 9am-9pm CST
Sat 11am-5pm

ComputAbility

Consumer Electronics

Mon-Fri 9am-9pm CST
Sat 11am-5pm

NEW

stair
micronics

NX-1000
•144 CPS-Draft
•30CPS-NLQ
• NLQ IN 10 & 12 Pitch
• 3 Built-In Fonts

ONLY \$169

NEW

stair
micronics

NX-1000
RAINBOW
NEW LOW COST
COLOR PRINTER

ONLY \$239

Commodore®
AMIGA® 500

CALL FOR
CURRENT PRICE

Panasonic
Office Automation

1080 i - II
Now at 144 CPS

ONLY \$169

Panasonic
Office Automation

1091 i - II
Now at 192 CPS

ONLY \$189

NEW **AVATEX 1200EX**
1200 BAUD HAYES COMPATIBLE
& RS 232 Interface

ONLY \$119

commodore®

1571 DISK DRIVE 64C COMPUTER
1802C MONITOR C-128D COMPUTER
1084 MONITOR 1541C DISK DRIVE

CALL FOR CURRENT PRICES & AVAILABILITY

1750 RAM EXPANDER 1351 MOUSE
AVATEX 1200 HC MODEM I CON TROLLER
1764 RAM EXPANDER 1670 MODEM
AVATEX 2400 HC MODEM XETEC GOLD INTERFACE

Basic Compiler 128	39.95
Beyond Zork	29.95
Cad Pak 128	39.95
Chart Pak 128	25.95
Cobol 128	39.95
Data Manager 128	42.95
Fleet System 4	46.95
Fontmaster 128	36.95

C-128 SOFTWARE	
GeoCalc 128	44.95
GeoFile 128	44.95
Geo Dex 128	44.95
Geos 128	44.95
Geowrite 128	44.95
Super Pascal 128	39.95
Partner 128	42.95

Super Pascal 128	39.95
SuperPak 2	59.95
Super Pak 128	46.95
Swiftcalc 128	42.95
Sylvia Porter 128	42.95
Visastar 128	54.95
Visawriter 128	54.95
Wordwriter 128	42.95

MISCELLANEOUS 64	
Accolade's Comics	19.95
Animation Station	59.95
Art Gallery 1 or 2	16.95
Battle Front	26.95
Bridge 5.0	19.95
Bureaucracy	22.95
Business Form Shop	25.95
Bumper Sticker Maker	31.95
Copy II 64	27.95
Contriver Mouse	36.95
Create a Basketball Team	17.95
Cyde Night	16.95
Dark Tower	19.95
Dark Castle	21.95
Elite	22.95
Final Cartridge 3	49.95
Flight Simulator II	33.95
Flex Draw	23.95
Fellowship/Ring	23.95
Fontmaster 2	30.95
Hobbit	23.95
Hollywood Hijinks	22.95
Hi Seas	32.95
Jet	27.95
Leather Goddesses	22.95
Lurking Horror	22.95
NBA	25.95
Night on the Town	19.95
Maniac Mansion	22.95

MICROPROSE	
Airborne Ranger	22.95
Crusade in Europe	25.95
Conflict in Vietnam	25.95
Decision in the Desert	25.95
F-15 Strike Eagle	22.95
Gunship	22.95
Kennedy Approach	16.95
Pirates	25.95
Pure Stat Basketball	25.95
Pure Stat Football	25.95
Pure Stat Baseball	35.95
Raiders on Raiders	22.95
Sentry	25.95
Star Trek 3/Rebel	26.95
Star Trek 1	22.95
Star Trek 2	22.95
Star Trek 3	25.95
Star Trek 4	25.95
Star Trek 5	25.95
Star Trek 6	25.95
Star Trek 7	25.95
Star Trek 8	25.95
Star Trek 9	25.95
Star Trek 10	25.95
Star Trek 11	25.95
Star Trek 12	25.95
Star Trek 13	25.95
Star Trek 14	25.95
Star Trek 15	25.95
Star Trek 16	25.95
Star Trek 17	25.95
Star Trek 18	25.95
Star Trek 19	25.95
Star Trek 20	25.95
Star Trek 21	25.95
Star Trek 22	25.95
Star Trek 23	25.95
Star Trek 24	25.95
Star Trek 25	25.95
Star Trek 26	25.95
Star Trek 27	25.95
Star Trek 28	25.95
Star Trek 29	25.95
Star Trek 30	25.95
Star Trek 31	25.95
Star Trek 32	25.95
Star Trek 33	25.95
Star Trek 34	25.95
Star Trek 35	25.95
Star Trek 36	25.95
Star Trek 37	25.95
Star Trek 38	25.95
Star Trek 39	25.95
Star Trek 40	25.95
Star Trek 41	25.95
Star Trek 42	25.95
Star Trek 43	25.95
Star Trek 44	25.95
Star Trek 45	25.95
Star Trek 46	25.95
Star Trek 47	25.95
Star Trek 48	25.95
Star Trek 49	25.95
Star Trek 50	25.95
Star Trek 51	25.95
Star Trek 52	25.95
Star Trek 53	25.95
Star Trek 54	25.95
Star Trek 55	25.95
Star Trek 56	25.95
Star Trek 57	25.95
Star Trek 58	25.95
Star Trek 59	25.95
Star Trek 60	25.95
Star Trek 61	25.95
Star Trek 62	25.95
Star Trek 63	25.95
Star Trek 64	25.95
Star Trek 65	25.95
Star Trek 66	25.95
Star Trek 67	25.95
Star Trek 68	25.95
Star Trek 69	25.95
Star Trek 70	25.95
Star Trek 71	25.95
Star Trek 72	25.95
Star Trek 73	25.95
Star Trek 74	25.95
Star Trek 75	25.95
Star Trek 76	25.95
Star Trek 77	25.95
Star Trek 78	25.95
Star Trek 79	25.95
Star Trek 80	25.95
Star Trek 81	25.95
Star Trek 82	25.95
Star Trek 83	25.95
Star Trek 84	25.95
Star Trek 85	25.95
Star Trek 86	25.95
Star Trek 87	25.95
Star Trek 88	25.95
Star Trek 89	25.95
Star Trek 90	25.95
Star Trek 91	25.95
Star Trek 92	25.95
Star Trek 93	25.95
Star Trek 94	25.95
Star Trek 95	25.95
Star Trek 96	25.95
Star Trek 97	25.95
Star Trek 98	25.95
Star Trek 99	25.95
Star Trek 100	25.95

AMIGA SOFTWARE	
Adv. Construction	10.95
Alternate Reality	20.95
American Civil War	26.95
America's Cup	10.95
Amnesia	26.95
Archon	10.95
Archon II	10.95
Arctic Fox	22.95
Bard's Tale	25.95
Battlefront	25.95
Bismarck	21.95
Carriers At War	31.95
Chessmaster 2000	25.95
Chickamauga	23.95
Dan Dare	14.95
Dark Lord	14.95
Delta Patrol	14.95
Demon Stalkers	20.95
Dragon's Lair	19.95
EOS	20.95
Europe Abaze	31.95
Financial Cookbook	10.95
Force 7	14.95
Halls of Montezuma	26.95
Heart of Africa	10.95
Hunt for Red October	22.95
Instant Music	24.95
Lords of Conquest	10.95
Marble Madness	20.95
Mavis Beacon Typing	26.95
Monopoly	26.95
Yessir AFS	24.95

ACTIVISION	
Allies	22.95
Champ Baseball '86	19.95
Gamemaker	25.95
Gamemaker Library	14.95
GFL Football	22.95
Greet Card Maker	22.95
Hacker II	22.95
Howard The Duck	22.95
Labyrinth	22.95
Last Ninja	22.95
Portal	25.95
Shanghai	19.95
Tess Times	19.95
Tot Fuel Eliminator	19.95
Transformers	19.95
2 on 2 Basketball	22.95
Might & Magic	25.95
Go Bee Air Rally	19.95
Postcards	17.95
Star Rank Boxing II	19.95

TIMEWORKS	
Business Systems	34.95
Data Manager II	25.95
Desktop Publisher	39.95
Evelyn Wood	32.95
Geo Writer	32.95
Partner 64	32.95
Sideways	19.95
Swiftax 86	32.95
Swiftcalc/Sideways	25.95
Sylvia Porter	32.95
Wordwriter 3	32.95

ACCESS	
Echelon	20.95
Executive Desk	14.95
Famous Courses	14.95
Leader Board	24.95
Mach V-Cart	21.95
Tournament Disk	14.95
Triple Pak	14.95
Wild Class Leader Bld	25.95
World Famous	14.95
Courses 1 or 2	14.95

ABACUS 64	
Basic Compiler	25.95
Chartpak	25.95
Cad-Pak	25.95
Forth	25.95
Geos Inside & Out	16.95
Powerplan	25.95
Personal Portfolio	25.95
Super C Compiler	39.95
Super Pascal	39.95
Xor System	39.95

BRODERBUND	
Autoduel	31.95
Bank St. Series(Ea)	32.95
Camden Santiago	22.95
Cauldron	19.95
Chopfliter-David's	19.95
Midnight	10.95
Graphic Lib. 1,2, or 3	16.95
Moebius	25.95
Ogre	25.95
P.S. Companion	22.95
Print Shop	28.95
Super Bike Challenge	19.95
Thinking Cap	22.95
Toy Shop	32.95
Ultima 1	25.95
Ultima 3	31.95
Ultima 4	38.95
Ultima 5 (March)	39.95

SPRINGBOARD	
Certificate Maker	25.95
Cert. Maker Lib 1	21.95
Cip Art 1 or 3	18.95
Cip Art 2	21.95
Graphics Expander	21.95
Newsroom	30.95

NO CHARGE FOR MASTERCARD OF VISA

800-558-0003

For Technical Info, Order Inquiries, or for Wisc.Orders

414-357-8181

Telex Number 9102405440 (Amstar/Bus/Comput Milw. WI)

NO CHARGE FOR MASTERCARD OF VISA

ORDER LINES OPEN
Mon-Fri 9am-9pm CST Sat 11 am-5 pm CST
To Order Call Toll Free

800-558-0003

For Technical Info, Order Inquiries, or for Wisc.Orders

414-357-8181

Telex Number 9102405440 (Amstar/Bus/Comput Milw. WI)

NO CHARGE FOR MASTERCARD OF VISA

ORDER LINES OPEN
Mon-Fri 9am-9pm CST Sat 11 am-5 pm CST
To Order Call Toll Free

800-558-0003

For Technical Info, Order Inquiries, or for Wisc.Orders

414-357-8181

Telex Number 9102405440 (Amstar/Bus/Comput Milw. WI)

NO CHARGE FOR MASTERCARD OF VISA

ORDER LINES OPEN
Mon-Fri 9am-9pm CST Sat 11 am-5 pm CST
To Order Call Toll Free

800-558-0003

For Technical Info, Order Inquiries, or for Wisc.Orders

414-357-8181

Telex Number 9102405440 (Amstar/Bus/Comput Milw. WI)

NO CHARGE FOR MASTERCARD OF VISA

ORDER LINES OPEN
Mon-Fri 9am-9pm CST Sat 11 am-5 pm CST
To Order Call Toll Free

800-558-0003

For Technical Info, Order Inquiries, or for Wisc.Orders

414-357-8181

Telex Number 9102405440 (Amstar/Bus/Comput Milw. WI)

NO CHARGE FOR MASTERCARD OF VISA

ORDER LINES OPEN
Mon-Fri 9am-9pm CST Sat 11 am-5 pm CST
To Order Call Toll Free

800-558-0003

For Technical Info, Order Inquiries, or for Wisc.Orders

414-357-8181

Telex Number 9102405440 (Amstar/Bus/Comput Milw. WI)

NO CHARGE FOR MASTERCARD OF VISA

ORDER LINES OPEN
Mon-Fri 9am-9pm CST Sat 11 am-5 pm CST
To Order Call Toll Free

800-558-0003

For Technical Info, Order Inquiries, or for Wisc.Orders

414-357-8181

Telex Number 9102405440 (Amstar/Bus/Comput Milw. WI)

NO CHARGE FOR MASTERCARD OF VISA

ORDER LINES OPEN
Mon-Fri 9am-9pm CST Sat 11 am-5 pm CST
To Order Call Toll Free

800-558-0003

For Technical Info, Order Inquiries, or for Wisc.Orders

414-357-8181

Telex Number 9102405440 (Amstar/Bus/Comput Milw. WI)

NO CHARGE FOR MASTERCARD OF VISA

ORDER LINES OPEN
Mon-Fri 9am-9pm CST Sat 11 am-5 pm CST
To Order Call Toll Free

800-558-0003

For Technical Info, Order Inquiries, or for Wisc.Orders

414-357-8181

Telex Number 9102405440 (Amstar/Bus/Comput Milw. WI)

NO CHARGE FOR MASTERCARD OF VISA

ORDER LINES OPEN
Mon-Fri 9am-9pm CST Sat 11 am-5 pm CST
To Order Call Toll Free

800-558-0003

For Technical Info, Order Inquiries, or for Wisc.Orders

414-357-8181

Telex Number 9102405440 (Amstar/Bus/Comput Milw. WI)

NO CHARGE FOR MASTERCARD OF VISA

ORDER LINES OPEN
Mon-Fri 9am-9pm CST Sat 11 am-5 pm CST
To Order Call Toll Free

800-558-0003

For Technical Info, Order Inquiries, or for Wisc.Orders

414-357-8181

Telex Number 9102405440 (Amstar/Bus/Comput Milw. WI)

NO CHARGE FOR MASTERCARD OF VISA

ORDER LINES OPEN
Mon-Fri 9am-9pm CST Sat 11 am-5 pm CST
To Order Call Toll Free

800-558-0003

For Technical Info, Order Inquiries, or for Wisc.Orders

414-357-8181

Telex Number 9102405440 (Amstar/Bus/Comput Milw. WI)

NO CHARGE FOR MASTERCARD OF VISA

ORDER LINES OPEN
Mon-Fri 9am-9pm CST Sat 11 am-5 pm CST
To Order Call Toll Free

800-558-0003

For

How To Type In COMPUTE!'s Gazette Programs

Each month, COMPUTE!'s Gazette publishes programs for the Commodore 128, 64, Plus/4, and 16. Each program is clearly marked by title and version. Be sure to type in the correct version for your machine. All 64 programs run on the 128 in 64 mode. Be sure to read the instructions in the corresponding article. This can save time and eliminate any questions which might arise after you begin typing.

We frequently publish two programs designed to make typing easier: The Automatic Proofreader, and MLX, designed for entering machine language programs.

When entering a BASIC program, be especially careful with DATA statements as they are extremely sensitive to errors. A mistyped number in a DATA statement can cause your machine to "lock up" (you'll have no control over the computer). If this happens, the only recourse is to turn your computer off then on, erasing what was in memory. So be sure to *save a program before you run it*. If your computer crashes, you can always reload the program and look for the error.

Special Characters

Most of the programs listed in each issue contain special control characters. To facilitate typing in any programs from the GAZETTE, use the following listing conventions.

The most common type of control characters in our listings appear as words within braces: {DOWN} means to press the cursor down key; {5 SPACES} means to press the space bar five times.

To indicate that a key should be *shifted* (hold down the SHIFT key while pressing another key), the character is underlined. For example, A means hold down the SHIFT key and press A. You may see strange characters on your screen, but that's to be expected. If you find a number followed by an underlined key enclosed in braces (for example, {8 A}), type the key as many times as indicated (in our example, enter eight SHIFTed A's).

If a key is enclosed in special brackets, [F3], hold down the Commodore key (at the lower left corner of the keyboard) and press the indicated character.

Rarely, you'll see a single letter of the alphabet enclosed in braces.

This can be entered on the Commodore 64 by pressing the CTRL key while typing the letter in braces. For example, {A} means to press CTRL-A.

The Quote Mode

Although you can move the cursor around the screen with the CRSR keys, often a programmer will want to move the cursor under program control. This is seen in examples such as {LEFT}, and {HOME} in the program listings. The only way the computer can tell the difference between direct and programmed cursor control is the *quote mode*.

Once you press the quote key, you're in quote mode. This mode can be confusing if you mistype a character and cursor left to change it. You'll see a reverse video character (a graphics symbol for cursor left). In this case, you can use the DELETE key to back up and edit the line. Type another quote and you're out of quote mode. If things really get confusing, you can exit quote mode simply by pressing RETURN. Then just cursor up to the mistyped line and fix it.

When You Read:	Press:	See:
{CLR}	SHIFT CLR/HOME	
{HOME}	CLR/HOME	
{UP}	SHIFT ↑ CRSR ↓	
{DOWN}	↑ CRSR ↓	
{LEFT}	SHIFT ← CRSR →	
{RIGHT}	← CRSR →	
{RVS}	CTRL 9	
{OFF}	CTRL 0	
{BLK}	CTRL 1	
{WHT}	CTRL 2	
{RED}	CTRL 3	
{CYN}	CTRL 4	

When You Read:	Press:	See:
{PUR}	CTRL 5	
{GRN}	CTRL 6	
{BLU}	CTRL 7	
{YEL}	CTRL 8	
{ F1 }	F1	
{ F2 }	SHIFT F1	
{ F3 }	F3	
{ F4 }	SHIFT F3	
{ F5 }	F5	
{ F6 }	SHIFT F5	
{ F7 }	F7	
{ F8 }	SHIFT F7	

When You Read:	Press:	See:
←	←	
↑	SHIFT ↑	

For Commodore 64 Only

[F1]	COMMODORE 1	
[F2]	COMMODORE 2	
[F3]	COMMODORE 3	
[F4]	COMMODORE 4	
[F5]	COMMODORE 5	
[F6]	COMMODORE 6	
[F7]	COMMODORE 7	
[F8]	COMMODORE 8	

MONTGOMERY GRANT

115 Nassau St. NY., NY. 10038
Bet. Beekman & Ann Sts. (212) 732-4500
Open Mon-Fri, 8:30-6:30/
Sun, 9:30-5:30 Sat Closed

FOR ORDERS AND
INFORMATION CALL
TOLL FREE
OPEN 7 DAYS EVERY WEEK
FOR ORDERS

1(800)345-7059

FAX NO. 212-564-1497

TELEX 422-132

Penn. Station, Amtrack Level Beneath
Madison Sq. Garden, NY., NY. 10001
(212) 594-7140 Open Mon-Wed, 8:30-8/Thurs
& Fri, 8:30-9/Sat & Sun, 10-7

IN NEW YORK STATE CALL
(212) 594-7140
FOR CUSTOMER SERVICE CALL
(718) 965-8686
MON - FRI 9AM - 4PM

3/88 GAZETTE

commodore
C-64C
With Geos Program!
\$149.95

commodore
C-128C
\$219.95
NEW C-128/D With
Built-in Disk Drive **\$439**

commodore
1541/C DISK DRIVE
\$149.95
1571 DISK DRIVE
\$209.95
1581 DISK DRIVE
\$189.95

C-Commodore
AMIGA 500
• 68000 Processor
• 512k Ram Expandable to 9MB
• Graphics Processor
IN STOCK!
AMIGA 500 w/1084 **\$769**
AMIGA 500 w/1084/1010 **\$979**
AMIGA 2000 IN STOCK! CALL

AMIGA PERIPHERALS

A-501 512K EXPANSION
A-1010 3.5" FLOPPY DRIVE
A-1020T 5.25" DISK DRIVE
with TRANSFORMER
A-1084 RGB COLOR MONITOR
A-1300 GENLOCK
1680 MODEM
A-2088 BRIDGE CARD
RF MODULATOR
GO 64 FOR AMIGA 500, 1000, 2000
USE YOUR 64 & 128 SOFTWARE
ON YOUR AMIGA **\$69.95**
THESE & OTHER PERIPHERALS
IN STOCK
WE WILL BEAT ANY PRICE!



C-64C COLOR PACKAGE

COMMODORE C-64C COMPUTER
COMMODORE 1541/C DISK DRIVE
COMMODORE COLOR PRINTER
COLOR MONITOR
GEOS SOFTWARE PROGRAM

\$478



C-64C COMPLETE PACKAGE

COMMODORE C-64/C COMPUTER
COMMODORE 1541 DISK DRIVE
COMMODORE COLOR PRINTER
12" MONITOR
GEOS SOFTWARE PROGRAM

\$329

COLOR MONITOR
ADD \$90



C-128C COMPLETE PACKAGE

COMMODORE 128 COMPUTER
COMMODORE 1541 DISK DRIVE
12" MONITOR
COMMODORE COLOR PRINTER

\$429

TO SUBSTITUTE 1571 FOR
1541 - ADD \$60



C-128C DELUXE PACKAGE

COMMODORE 128 COMPUTER
COMMODORE 1571 DISK DRIVE
COMMODORE 1902 COLOR MONITOR
COMMODORE 1515 80 COLUMN PRINTER

\$679

LEADING EDGE MODEL D PACKAGE IBM PC/XT COMPATIBLE



• 512K RAM Computer • Keyboard
• 360K Floppy Drive • 4.7-7.16 MHz
• 12" Monitor • 8088-2 Processor

\$799

Same Package with
20MB Hard Drive **\$1049**



APPLE MAC+ PACKAGE

Mac + Computer •
Built-in 800K Disk
Drive • 1 MB RAM
• Apple Software • Apple
Mouse • Apple Monitor • Key Board • Box
of 10 Diskettes

\$1579

MAC SE w/Apple 20MB
Hard Drive **\$2599**

APPLE IIGS

RGB COLOR MONITOR PKG.
Apple IIGS Keyboard • 3 1/2" Disk Drive
Apple RGB Color Monitor • 10 Disk
ettes • Apple Software • AC Adapters
• All Hook-up Cables • Apple Mouse

\$1379



APPLE IMAGEWRITER II PRINTER

• Apple IIC or IIE Computer • 5.25" Drive • 12"
Monitor • All Hook-up Cables and Adapters
• Package of 10 Diskettes

\$459

APPLE IIC PACKAGE

MAC SE.....\$1949
MAC SE W/20 MB APPLE HARD
DRIVE.....\$2499
APPLEWORKS.....\$89.95

\$579

\$799



IBM PC/XT COMPATIBLE PACKAGE

• PC10-1 Computer
• 521K Expandable
to 640K
• 360K Disk Drive
• Enhanced
Keyboard
• Serial &
Parallel Ports
• 12" Monitor
• All Hook-up Cables & Adapters
• Package of 10 Diskettes

\$499

Same Package with
20MB Hard Drive **\$769**

COMMODORE PC-10/2 640K
COMPUTER W/2 360K DRIVES
& ABOVE PACKAGE **\$599**

COMPUTER PRINTERS

commodore
MPS-803C PRINTER
\$119
MPS-1200 PRINTER
\$209
MPS-1250 PRINTER
\$239
DPS 1101 DAISY WHEEL PRINTER
\$159

EPSON
FX-88E.....\$309.95
FX-288E.....\$449.95
LQ-800.....\$399.95
LQ-1000.....\$499.95
EX-1000.....\$459.95
EX-800.....\$429.95
LQ-850.....\$439.95
LQ-1050.....\$659.95
star
NX-1000.....\$169.95
NX-15.....\$289.95
NB-2410.....\$399.95
NB-2415.....\$539.95
OKIDATA
OKIDATA-120.....\$199.95
OKIMATE-20w/PLUG-N-PRINT.....\$189.95
OKIDATA-180.....\$219.95

commodore
1902 RGB COLOR
MONITOR
\$214.95
1802 COLOR
MONITOR
\$169.95
2002 COLOR
MONITOR
\$229.95
THOMPSON RGB
COLOR MONITOR **\$289.95**

#1700 128K
EXPANSION MODULE.....\$99.95
#1750 512K
EXPANSION MODULE.....\$169.95
#1764
EXPANSION MODULE.....\$119.95
#1670 AUTOMODEM.....\$129.95
XETEC JR. INTERFACE.....\$34.95
XETEC SR. INTERFACE.....\$54.95
C-128 POWER SUPPLY.....\$39.95
C64/C64-C
POWER SUPPLY.....\$29.95
1351 MOUSE **\$39.95**
20MB HARD DRIVES FOR
C-64/C.....\$769 C-128.....\$849



Certified check, Bank check, Mastercard, Visa, Am-Ex, Diner's Club, Carte-Blanche, Discover Card and C.O.D.s accepted. No additional surcharge for credit card orders. Non-certified checks must wait 4-6 weeks clearance. Money orders are non-certified checks. N.Y. residents add applicable sales tax. Prices and availability subject to change without notice. Not responsible for typographic errors. Return of defective merchandise must have prior return authorization number, or returns will not be accepted. IBM PC/XT are registered trademarks of International Business Machine Corp. All orders can be shipped Air Express-call for details.

NO SURCHARGE FOR CREDIT CARD ORDERS

WE INVITE CORPORATE & EDUCATIONAL CUSTOMERS

NO SURCHARGE FOR CREDIT CARD ORDERS

The Automatic Proofreader

Philip I. Nelson

"The Automatic Proofreader" helps you type in program listings for the 128, 64, Plus/4, and 16 and prevents nearly every kind of typing mistake.

Type in the Proofreader *exactly* as listed. Since the program can't check itself, type carefully to avoid mistakes. Don't omit any lines, even if they contain unfamiliar commands. After finishing, save a copy or two on disk or tape before running it. This is important because the Proofreader erases the BASIC portion of itself when you run it, leaving only the machine language portion in memory.

Next, type RUN and press RETURN. After announcing which computer it's running on, the Proofreader displays the message "Proofreader Active". Now you're ready to type in a BASIC program.

Every time you finish typing a line and press RETURN, the Proofreader displays a two-letter checksum in the upper-left corner of the screen. Compare this result with the two-letter checksum printed to the left of the line in the program listing. If the letters match, it's almost certain the line was typed correctly. If the letters don't match, check for your mistake and correct the line.

The Proofreader ignores spaces not enclosed in quotes, so you can omit or add spaces between keywords and still see a matching checksum. However, since spaces inside quotes are almost always significant, the Proofreader pays attention to them. For example, **10 PRINT "THIS IS BASIC"** will generate a different checksum than **10 PRINT "THIS ISBA SIC"**.

A common typing error is transposition—typing two successive characters in the wrong order, like **PIRNT** instead of **PRINT** or **64378** instead of **64738**. The Proofreader is sensitive to the position of each character within the line and thus catches transposition errors.

The Proofreader does *not* accept keyword abbreviations (for example, ? instead of PRINT). If you prefer to use abbreviations, you can still check the line by LISTING it after typing it in, moving the cursor back to the line, and pressing RETURN. LISTING the line

substitutes the full keyword for the abbreviation and allows the Proofreader to work properly. The same technique works for rechecking programs you've already typed in.

If you're using the Proofreader on the Commodore 128, Plus/4, or 16, *do not perform any GRAPHIC commands while the Proofreader is active*. When you perform a command like GRAPHIC 1, the computer moves everything at the start of BASIC program space—including the Proofreader—to another memory area, causing the Proofreader to crash. The same thing happens if you run any program with a GRAPHIC command while the Proofreader is in memory.

Though the Proofreader doesn't interfere with other BASIC operations, it's a good idea to disable it before running another program. However, the Proofreader is purposely difficult to dislodge: It's not affected by tape or disk operations, or by pressing RUN/STOP-RESTORE. The simplest way to disable it is to turn the computer off then on. A gentler method is to SYS to the computer's built-in reset routine (SYS 65341 for the 128, 64738 for the 64, and 65526 for the Plus/4 and 16). These reset routines erase any program in memory, so be sure to save the program you're typing in before entering the SYS command.

If you own a Commodore 64, you may already have wondered whether the Proofreader works with other programming utilities like "MetaBASIC." The answer is generally yes, if you're using a 64 and activate the Proofreader after installing the other utility. For example, first load and activate MetaBASIC, then load and run the Proofreader.

When using the Proofreader with another utility, you should disable both programs before running a BASIC program. While the Proofreader seems unaffected by most utilities, there's no way to promise that it will work with any and every combination of utilities you might want to use. The more utilities activated, the more fragile the system becomes.

The New Automatic Proofreader

```
10 VEC=PEEK(772)+256*PEEK(773)
:LO=43:HI=44
```

```
20 PRINT "AUTOMATIC PROOFREADER FOR ";IF VEC=42364 THEN [SPACE]PRINT "C-64"
30 IF VEC=50556 THEN PRINT "V1 C-20"
40 IF VEC=35158 THEN GRAPHIC CLR:PRINT "PLUS/4 & 16"
50 IF VEC=17165 THEN LO=45:HI=46:GRAPHIC CLR:PRINT "128"
60 SA=(PEEK(LO)+256*PEEK(HI))+6:ADR=SA
70 FOR J=0 TO 166:READ BYT:POKE ADR,BYT:ADR=ADR+1:CHK=CHK+BYT:NEXT
80 IF CHK<>20570 THEN PRINT "**ERROR* CHECK TYPING IN DATA STATEMENTS":END
90 FOR J=1 TO 5:READ RF,LF,HF:RS=SA+RF:HB=INT(RS/256):LB=RS-(256*HB)
100 CHK=CHK+RF+LF+HF:POKE SA+LF,LF:POKE SA+HF,HF:NEXT
110 IF CHK<>22054 THEN PRINT "**ERROR* RELOAD PROGRAM AND [SPACE]CHECK FINAL LINE":END
120 POKE SA+149,PEEK(772):POKE SA+150,PEEK(773)
130 IF VEC=17165 THEN POKE SA+14,22:POKE SA+18,23:POKE SA+29,224:POKE SA+139,224
140 PRINT CHR$(147);CHR$(17):"PROOFREADER ACTIVE":SYS SA
150 POKE HI,PEEK(HI)+1:POKE (PEEK(LO)+256*PEEK(HI))-1,0:NEW
160 DATA 120,169,73,141,4,3,16
170 DATA 9,3,141,5,3
180 DATA 88,96,165,20,133,167,165,21,133,168,169
190 DATA 0,141,0,255,162,31,181,199,157,227,3
200 DATA 202,16,248,169,19,32,210,255,169,18,32
210 DATA 210,255,160,0,132,180,132,176,136,230,180
220 DATA 200,185,0,2,240,46,201,34,208,8,72
230 DATA 165,176,73,255,133,176,104,72,201,32,208
240 DATA 7,165,176,208,3,104,208,226,104,166,180
250 DATA 24,165,167,121,0,2,133,167,165,168,105
260 DATA 0,133,168,202,208,239,240,202,165,167,69
270 DATA 168,72,41,15,168,185,211,3,32,210,255
280 DATA 104,74,74,74,74,168,185,211,3,32,210
290 DATA 255,162,31,189,227,3,149,199,202,16,248
300 DATA 169,146,32,210,255,76,86,137,65,66,67
310 DATA 68,69,70,71,72,74,75,77,80,81,82,83,88
320 DATA 13,2,7,167,31,32,151,116,117,151,128,129,167,136,137
```




FREE FREIGHT ON ORDERS OVER \$100.

ALL PRICES REFLECT A 3% CASH DISCOUNT. ADD 3% FOR CREDIT CARD PURCHASES. COD ORDERS ADD \$4 PER BOX. ORDERS UNDER \$100 ADD \$4 SHIPPING AND HANDLING. QUANTITIES ON SOME ITEMS MAY BE LIMITED. PRICES ARE SUBJECT TO CHANGE WITHOUT NOTICE. APO, FPO ADD 6% ADDITIONAL SHIPPING. FOREIGN ORDERS ACTUAL FREIGHT CHARGED. ALL SALES ARE FINAL. RETURN OF DEFECTIVE MERCHANDISE FOR REPLACEMENT ONLY WITH AUTHORIZATION. AUTHORIZED RETURNS ARE SUBJECT TO A RESTOCKING FEE. COMPLETE LISTING OF ALL SALES POLICIES AVAILABLE UPON REQUEST. *EXCEPT ON ITEMS MARKED BY AN ASTERISK.

S & S Wholesalers, Inc.

226 Lincoln Road • Miami Beach, Florida 33139

CALL
TOLL FREE

1-800-233-6345

DEALERS & EDUCATIONAL ACCOUNTS 1-800-331-7054

CUSTOMER SERVICE & ORDER STATUS 1-305-538-1364

RUN

AHOY

GAZZETTE

COMMODORE

FREE SAME DAY SHIPPING

COMMODORE C64

89⁹⁰



*WITH THE PURCHASE OF
SPECIAL SOFTWARE PACK

STAR MICRONICS PRINTER

99⁹⁰

COMMODORE INTERFACE 19⁹⁰

C64 POWER SUPPLY

28⁹⁰

5.25" BLANK DISKETTES DSDD

19¢

MIN. 50

WITH PURCHASE OF DISK FILE

C64 WORD PROCESSING SYSTEM

C64 COMPUTER
1541 COMPATIBLE DRIVE
WORD PRO 3 w/SPELL CHECK
80 COL PRINTER
10 DISKS

399⁹⁰

**CALL FOR
FREE
CATALOG**

COMMODORE 128-D

399⁹⁰

*WITH THE PURCHASE
OF SOFTWARE PACKAGE

COMMODORE 1802 MONITORS



159⁰⁰

FACTORY RECONDITIONED
w/WARRANTY

COMMODORE C16

39⁹⁰

EPSON PRINTER

WITH COMMODORE
INTERFACE

100CPS 30CPS NCQ **169⁹⁰**

SOFTWARE TOP 10

1. GEOPUBLISH	41.97
2. WWF WRESTLING	23.77
3. AIRBORNE RANGER	23.77
4. WORDWRITER 128	34.90
5. ZORK II	6.77
6. SKATE OR DIE	27.77
7. PRINT SHOP	25.97
8. 4TH AND INCHES	17.77
9. LEGACY OF THE ACIENTS	24.77
10. NEWSROOM	29.00

**OVER 2000
TITLES IN
STOCK CALL
FOR BEST PRICING**

COMMODORE

AMIGA 500

CALL

AMIGA 2000

CALL

300 BAUD COMMODORE MODEM

19⁹⁰

1200 BAUD DIRECT CONNECT MODEM

69⁹⁰

PRINTER RIBBONS

PANASONIC	6.77
OKIMATE COLOR	6.77
EPSON	from 4.77
COMMODORE	from 3.77

COMMODORE

DDS 1101 **249⁹⁰**

LETTER QUALITY PRINTER

C128-D SUPER SYSTEM

C128-D COMPUTER
w/BUILT-IN DISK DRIVE

HI-RES MONOCHROME
MONITOR

80 COL PRINTER
w/INTERFACE

599⁹⁰

MLX Machine Language Entry Program For Commodore 64 and 128

Ottis R. Cowper, Technical Editor

"MLX" is a labor-saving utility that allows almost fail-safe entry of machine language programs. Included are versions for the Commodore 64 and 128.

Type in and save some copies of whichever version of MLX is appropriate for your computer (you'll want to use it to enter future ML programs from COMPUTE's GAZETTE). Program 1 is for the Commodore 64, and Program 2 is for the 128 (128 MLX can also be used to enter Commodore 64 ML programs for use in 64 mode). When you're ready to enter an ML program, load and run MLX. It asks you for a starting address and an ending address. These addresses appear in the article accompanying the MLX-format program listing you're typing.

If you're unfamiliar with machine language, the addresses (and all other values you enter in MLX) may appear strange. Instead of the usual decimal numbers you're accustomed to, these numbers are in *hexadecimal*—a base 16 numbering system commonly used by ML programmers. Hexadecimal—hex for short—includes the numerals 0-9 and the letters A-F. But don't worry—even if you know nothing about ML or hex, you should have no trouble using MLX.

After you enter the starting and ending addresses, you'll be offered the option of clearing the workspace. Choose this option if you're starting to enter a new listing. If you're continuing a listing that's partially typed from a previous session, don't choose this option.

A functions menu will appear. The first option in the menu is ENTER DATA. If you're just starting to type in a program, pick this. Press the E key, and type the first number in the first line of the program listing. If you've already typed in part of a program, type the line number where you left off typing at the end of the previous session (be sure to load the partially completed program before you resume entry). In any case, make sure the address you enter corresponds to the address of a line in the listing you are entering. Otherwise, you'll be unable to enter the data correctly. If you pressed E by mistake, you can return to the command menu by pressing RETURN alone when asked for the address. (You can get back to the menu from most options by pressing RETURN with no other input.)

Entering A Listing

Once you're in Enter mode, MLX prints the address for each program line for you. You then type in all nine numbers on that line, beginning with the first two-digit number after the colon (:). Each line represents eight data bytes and a checksum. Although an MLX-format listing appears similar to the "hex dump" listings from a machine language monitor program, the extra checksum number on the end allows MLX to check your typing. (Commodore 128 users can enter the data from an MLX listing using the built-in monitor if the rightmost column of data is omitted, but we recommend against it. It's much easier to let MLX do the proof-reading and error checking for you.)

When you enter a line, MLX recalculates the checksum from the eight bytes and the address and compares this value to the number from the ninth column. If the values match, you'll hear a bell tone, the data will be added to the workspace area, and the prompt for the next line of data will appear. But if MLX detects a typing error, you'll hear a low buzz and see an error message. The line will then be redisplayed for editing.

Invalid Characters Banned

Only a few keys are active while you're entering data, so you may have to unlearn some habits. You *do not* type spaces between the columns; MLX automatically inserts these for you. You *do not* press RETURN after typing the last number in a line; MLX automatically enters and checks the line after you type the last digit.

Only the numerals 0-9 and the letters A-F can be typed in. If you press any other key (with some exceptions noted below), you'll hear a warning buzz. To simplify typing, 128 MLX redefines the function keys and + and - keys on the numeric keypad so that you can enter data one-handed. (The 64 version incorporates the keypad modification from the March 1986 "Bug-Swatter" column, lines 485-487.) In either case, the keypad is active only while entering data. Addresses must be entered with the normal letter and number keys. The figures above show the keypad configurations for each version.

MLX checks for transposed characters. If you're supposed to type in A0 and instead enter 0A, MLX will catch your mistake. There is one error that

64 MLX Keypad

7	8	9	0
4 U	5 I	6 O	F P
1 J	2 K	3 L	E :
A M	B ,	C .	D /
0 Space			

128 MLX Keypad

A (F1)	B (F3)	C (F5)	D (F7)
7	8	9	E (+)
4	5	6	F (-)
1	2	3	E N T E R
0	.		

can slip past MLX: Because of the checksum formula used, MLX won't notice if you accidentally type FF in place of 00, and vice versa. And there's a very slim chance that you could garble a line and still end up with a combination of characters that adds up to the proper checksum. However, these mistakes should not occur if you take reasonable care while entering data.

Editing Features

To correct typing mistakes before finishing a line, use the INST/DEL key to delete the character to the left of the cursor. (The cursor-left key also deletes.) If you mess up a line really badly, press CLR/HOME to start the line over. The RETURN key is also active, but only before any data is typed on a line. Pressing RETURN at this point returns you to the command menu. After you type a character of data, MLX disables RETURN until the cursor returns to the start of a line. Remember, you can press CLR/HOME to quickly get to a line

UTILITIES

SUPER 81 UTILITIES

Super 81 Utilities is a complete utilities package for the 1581 disk drive and C128 computer. Among the many Super 81 Utilities features are:

- Copy whole disks from 1541 or 1571 format to 1581 partitions
- Copy 1541 or 1571 files to 1581 disks
- Copy 1581 files to 1571 disks
- Backup 1581 disks or files with 1 or 2 1581's
- 1581 Disk Editor, Drive Monitor, RAM Writer
- Supplied on both 3 1/2" and 5 1/4" diskettes so that it will load on either the 1571 or 1581 drive
- Perform many CP/M and MS-DOS utility functions
- Perform numerous DOS functions such as rename a disk, rename a file, scratch or unscratch files, lock or unlock files, create auto-boot and much more!

Super 81 Utilities uses an option window to display all choices available at any given time. A full featured disk utilities system for the 1581 for only **\$39.95!**

SUPER DISK UTILITIES

The ultimate utilities disk for the 1571 disk drive and C128 computer. Copy whole disks (with 1 or 2 drives), change disk format (without affecting data), perform CBM, DOS, CP/M, and MS-DOS utility functions, contains disk editor, drive monitor, RAM Writer and more for only **\$39.95!**

"...excellent, efficient program that can help you save both money and downtime."

Computer's Gazette,
Dec., 1987

1541/1571 DRIVE ALIGNMENT

1541/1571 Drive Alignment reports the alignment condition of the disk drive as you perform adjustments. On screen help is available while the program is running. Includes features for speed adjustment and stop adjustment. Complete instruction manual on aligning both 1541 and 1571 drives. Even includes instructions on how to load alignment program when nothing else will load! Works on the C64, SX64, C128 in either 64 or 128 mode, 1541, 1571 in either 1541 or 1571 mode! Autoboots to all modes. Second drive fully supported. Program disk, calibration disk and instruction manual only **\$4.95!**

SUPER AIDE

All-purpose utility program for the C64 provides:

- Bi-directional scrolling
- Auto Line Deletion
- Trace function
- Disassembler
- Lo-Res Screen Dump
- Number conversion (10, hex, binary)
- Append files
- Perform FRE(0)
- Format — short new/complete new
- Menu-driven
- Change THIS TO THAT — search for all instances of specified string and replace with second specified string
- Auto Line Numbering
- Renumber
- ML Monitor
- List all variables to screen
- Hi-Res Screen Dump
- Restore newed Basic program
- Change Device number
- Packed Line Editor
- Determine file load address
- And much, much more!

Super Aide, the complete programmer's toolkit. Only **\$29.95!**

NEW

GAMES



SUPER BIKE

Action-packed, fun-filled motor cycle arcade game for the C64. Race the clock in Motocross, Enduro, Supercross or Trials. Fly through the air on spectacular jumps. Bounce over woop-de-doo's. Avoid logs, trees, water holes, brick walls, other bikers, etc. as you vie for the gold cup.

Thrilling Super Bike action for only **\$19.95.**

NEW

FOUR TEXT ADVENTURES

Four text adventures for the C64 on one disk!

YUKON — You are forced to crash land your plane in the wilds of the Yukon. In your struggle against nature, you must acquire five valuable objects and deposit each one at the bank in Dawson.

SHIFTING SANDS — You are stranded in the Sahara desert. You must assemble four valuable objects and carry them to the observatory of Akhnaton. Entering the proper set of magic words wins the game.

STALAG 23 — Escape from the prisoner of war camp.

ON THE RUN — Sequel to Stalag 23. Find your way back to safety while avoiding your pursuers.

Four challenging adventure games for only **\$9.95!**

NEW

GALACTIC FRONTIER

Exciting space exploration game for the C64. Search for life forms among the 200 billion stars in our galaxy. Scientifically accurate. Awesome graphics! For the serious student of astronomy or the casual explorer who wants to boldly go where no man has gone before. Only **\$29.95!**



Torchbearer

Years ago, Talis Vaultheart, a powerful and evil wizard, stole the Torch of Truth and hid it somewhere within the many sanctuaries and dungeons of Pastoria. With the people thus blinded, Vaultheart began to take the land. The time has come to take it back!

The land of Pastoria is a large island with many smaller islands surrounding. You will explore many of them on your quest for the lost torch. Although you start as a common citizen, you are far from common. You possess the last of the mysterious luckstones! Study magic, increase your fighting strength and speak with the townspeople. All this will help you on your quest.

Torchbearer is a challenging, graphic adventure game for the C64. **\$29.95.**

NEW

Order with check, money order, VISA, MasterCard, COD. Free shipping & handling on US, Canadian, APO, FPO orders. COD & Foreign orders add \$4.00. Order from:

Free Spirit Software, Inc.

905 W. Hillgrove, Suite 6
LaGrange, IL 60525
(312) 352-7323



Over 80 titles
to choose from.
Write or call for your
FREE
catalog today!

FREE SPIRIT SOFTWARE, INC.

number prompt.

More editing features are available when correcting lines in which MLX has detected an error. To make corrections in a line that MLX has redisplayed for editing, compare the line on the screen with the one printed in the listing, then move the cursor to the mistake and type the correct key. The cursor left and right keys provide the normal cursor controls. (The INST/DEL key now works as an alternative cursor-left key.) You cannot move left beyond the first character in the line. If you try to move beyond the rightmost character, you'll reenter the line. During editing, RETURN is active; pressing it tells MLX to recheck the line. You can press the CLR/HOME key to clear the entire line if you want to start from scratch, or if you want to get to a line number prompt to use RETURN to get back to the menu.

Display Data

The second menu choice, DISPLAY DATA, examines memory and shows the contents in the same format as the program listing (including the checksum). When you press D, MLX asks you for a starting address. Be sure that the starting address you give corresponds to a line number in the listing. Otherwise, the checksum display will be meaningless. MLX displays program lines until it reaches the end of the program, at which point the menu is redisplayed. You can pause the display by pressing the space bar. (MLX finishes printing the current line before halting.) Press space again to restart the display. To break out of the display and get back to the menu before the ending address is reached, press RETURN.

Other Menu Options

Two more menu selections let you save programs and load them back into the computer. These are SAVE FILE and LOAD FILE; their operation is quite straightforward. When you press S or L, MLX asks you for the filename. You'll then be asked to press either D or T to select disk or tape.

You'll notice the disk drive starting and stopping several times during a load or save (save only for the 128 version). Don't panic; this is normal behavior. MLX opens and reads from or writes to the file instead of using the usual LOAD and SAVE commands (128 MLX makes use of BLOAD). Disk users should also note that the drive prefix 0: is automatically added to the filename (line 750 in 64 MLX), so this should not be included when entering the name. This also precludes the use of @ for Save-with-Replace, so remember to give each version you save a different

name. The 128 version makes up for this by giving you the option of scratching the existing file if you want to reuse a filename.

Remember that MLX saves the entire workspace area from the starting address to the ending address, so the save or load may take longer than you might expect if you've entered only a small amount of data from a long listing. When saving a partially completed listing, make sure to note the address where you stopped typing so you'll know where to resume entry when you reload.

MLX reports the standard disk or tape error messages if any problems are detected during the save or load. (Tape users should bear in mind that Commodore computers are never able to detect errors during a save to tape.) MLX also has three special load error messages: INCORRECT STARTING ADDRESS, which means the file you're trying to load does not have the starting address you specified when you ran MLX; LOAD ENDED AT address, which means the file you're trying to load ends before the ending address you specified when you started MLX; and TRUNCATED AT ENDING ADDRESS, which means the file you're trying to load extends beyond the ending address you specified when you started MLX. If you see one of these messages and feel certain that you've loaded the right file, exit and rerun MLX, being careful to enter the correct starting and ending addresses.

The 128 version also has a CATALOG DISK option so you can view the contents of the disk directory before saving or loading.

The QUIT menu option has the obvious effect—it stops MLX and enters BASIC. The RUN/STOP key is disabled, so the Q option lets you exit the program without turning off the computer. (Of course, RUN/STOP-RE-STORE also gets you out.) You'll be asked for verification; press Y to exit to BASIC, or any other key to return to the menu. After quitting, you can type RUN again and reenter MLX without losing your data, as long as you don't use the clear workspace option.

The Finished Product

When you've finished typing all the data for an ML program and saved your work, you're ready to see the results. The instructions for loading and using the finished product vary from program to program. Some ML programs are designed to be loaded and run like BASIC programs, so all you need to type is LOAD "filename",8 for disk (DLOAD "filename" on the 128) or LOAD "filename" for tape, and then RUN. Such

programs will usually have a starting address of 0801 for the 64 or 1C01 for the 128. Other programs must be reloaded to specific addresses with a command such as LOAD "filename",8,1 for disk (BLOAD "filename" on the 128) or LOAD "filename",1,1 for tape, then started with a SYS to a particular memory address. On the Commodore 64, the most common starting address for such programs is 49152, which corresponds to MLX address C000. In either case, you should always refer to the article which accompanies the ML listing for information on loading and running the program.

An Ounce Of Prevention

By the time you finish typing in the data for a long ML program, you may have several hours invested in the project. Don't take chances—use our "Automatic Proofreader" to type the new MLX, and then test your copy thoroughly before first using it to enter any significant amount of data. Make sure all the menu options work as they should. Enter fragments of the program starting at several different addresses, then use the Display option to verify that the data has been entered correctly. And be sure to test the Save and Load options several times to ensure that you can recall your work from disk or tape. Don't let a simple typing error in the new MLX cost you several nights of hard work.

Program 1: MLX For Commodore 64

```
SS 10 REM VERSION 1.1: LINES 8
    30,950 MODIFIED, LINES 4
    85-487 ADDED
EK 100 POKE 56,50:CLR:DIM IN$,
    I,J,A,B,A$,B$,A(7),N$
DM 110 C4=48:C6=16:C7=7:Z2=2:Z
    4=254:Z5=255:Z6=256:Z7=
    127
CJ 120 FA=PEEK(45)+Z6*PEEK(46)
    :BS=PEEK(55)+Z6*PEEK(56)
    :H$="0123456789ABCDEF"
SB 130 R$=CHR$(13):L$=" {LEFT}"
    :S$=" ":D$=CHR$(20):Z$=
    CHR$(0):T$="{13 RIGHT}"
CQ 140 SD=54272:FOR I=SD TO SD
    +23:POKE I,0:NEXT:POKE
    {SPACE}SD+24,15:POKE 78
    8,52
FC 150 PRINT "{CLR}"CHR$(142)CH
    R$(8):POKE 53280,15:POK
    E 53281,15
EJ 160 PRINT T$ " {RED}[RVS]
    {2 SPACES}[8 @]
    {2 SPACES}"SPC(28)"
    {2 SPACES}[OFF][BLU] ML
    X II {RED}[RVS]
    {2 SPACES}"SPC(28)"
    {12 SPACES}[BLU]"
FR 170 PRINT "{3 DOWN}
    {3 SPACES}COMPUTE!'S MA
    CHINE LANGUAGE EDITOR
    {3 DOWN}"
JB 180 PRINT "[BLK]STARTING ADD
```


Jump On The TENEX Express

No Gimmicks, No Hidden Charges, No Nonsense, Just Low Prices and Great Service!

FREE

DUST COVER & EVERYTHING BOOK

Discover the savings and easy shopping available from TENEX Computer Express PLUS receive a **FREE** dust cover for your C64, C128 or 64C! Cover is anti-static, 8-gauge vinyl sewn to our exacting standards with reinforced seams. Get to know our great products, extensive selection and fast service with a **FREE** copy of our *Everything Book for Commodore Computing*. (\$2.95 Shipping Charge)

31627 C-64 Dust Cover and Catalog (G4L)
38464 C-128 Dust Cover and Catalog (G4L)
65180 64C Dust Cover and Catalog (G4L)

From **micro kit**® ...

THE 39¢ DISKETTE!

Are you paying too much for diskettes? Try our first quality, prime, 5 1/4" diskettes (no rejects, no seconds) at these fantastic sale prices and save, save, **SAVE!** Disks are packaged in boxes of 50; including diskettes in sleeves, labels, and write-protect tabs.

Each diskette is certified to be 100% error free and comes with a lifetime warranty (if you have a problem, we'll replace the diskette). All diskettes include hub reinforcement rings and write-protect notch.

All diskettes are double density and work in either single or double density drives.

SS, DD Diskettes, Box of 50

32391 \$19.50 - 39¢ ea.!

DS, DD Diskettes, Box of 50

32403 \$24.50 - 49¢ ea.!

Super Deal On Diskette Storage!



**Only
\$9.95**

- A whopping 100 disk (5 1/4") capacity.
- Lock and keys for extra security and easy carrying.
- Includes 8 index dividers with labels for organization of filing and retrieval.
- Made of durable anti-static, high impact plastic.
- Attractive smoked color lid.

Sug. Retail \$19.95
NOW ONLY \$9.95

66826

Hardware Specials

FDS-2 Disk Drive	\$159.00	NEW! Star NX-1000	\$CALL
Excel 2001 Disk Drive	\$209.00	Star NX-10	\$CALL
13-inch Color Monitor	\$159.95	Star NP-10 Printer	\$CALL
Pow'r Pak 64	\$39.95	NEW! Commodore 128D Computer	\$CALL
Pow'r Pak 128	\$59.95	Commodore 1571 Disk Drive	\$CALL
Okidata 180 Printer	\$224.95	Commodore 1581 Disk Drive	\$CALL
Okidata 120 Printer	\$189.95	Commodore 2002 Monitor	\$CALL
Seikosha SP-180VC	\$149.95	Commodore 1351 Mouse	\$33.95
Seikosha SP-1000VC	\$189.95	1750 RAM Expansion-	
Super Graphix	\$59.95	512 K Cartridge, C128	\$179.95
Super Graphix Jr.	\$44.95	1764 RAM Expansion-	
Super Graphix Gold	\$CALL	256K Cartridge, C64	\$124.95
IconTroller	\$17.95	C128 Computer System	\$CALL
Epyx 500XJ Joystick	\$14.95		

Software Specials

GEOS-64	\$39.95	GEOS-128	\$44.95
Basic 8	\$33.95	Echelon	\$26.95
Fontpack I	\$19.95	geoFile	\$36.95
geoCalc	\$33.95	Writer's Workshop-64	\$33.95
Deskpack	\$24.95	Writer's Workshop-128	\$44.95

Free! 52 Page "Everything Book" With Any Order!

Unleash The Power of CP/M™ On Your C128!



**ONLY
\$22.95**

Includes Free CP/M Programs

• Word Processor • Disk Utilities • Communications
CP/M Kit includes a helpful guide to using CP/M such as: stressing the unique features of Commodore's CP/M, using your 1541 or 1571 drive with CP/M, and using your modem to access electronic bulletin boards that offer free, downloadable software.

67392 2 Disks & Manual for C128 \$22.95

***THE BEST PRICES*
THE BEST SERVICE
WHY SHOP
ANYWHERE ELSE?**

THE FAMOUS SLIK STIK™

The Slik Stik™ has been a favorite for years... and for good reason. It's just the right combination of responsiveness and accuracy. And the price can't be beat! From Suncom. 90 day warranty. Connects directly to Commodore Computers.

42086

\$6.95

\$159

**FSD-2
Disk Drive**



Reviewed by
RUN Magazine:

"...higher-than-average quality...10% faster than a 1541...half the size...you can rest assured that the FSD-2 will do a fine job for you."

Runs all C64 Commercial Software.
Full 1 Year Warranty.

66166 Disk Drive **\$159**

Only \$6.95!



From Your Friends At

**TENEX
Computer
Express**

We gladly accept mail orders!
P.O. Box 6578
South Bend, IN 46660

Questions?
Call 219/259-7051

Ad
G4L

Shipping Charges

Order Amount	Charge
less than \$20.00	\$3.75
\$20.00-\$39.99	4.75
\$40.00-\$74.99	5.75
\$75.00-\$149.99	6.75
\$150.00-\$299.99	7.75
\$300.00 & up	8.75



NO EXTRA FEE FOR CHARGES!

ORDER TOLL FREE

1-800-348-2778

INDIANA ORDER LINE 1-800-225-6838
WE VERIFY CHARGE CARD ADDRESSES

COMMODORE 64 is a registered trademark; and COMMODORE 128 is a trademark of Commodore Electronics, Ltd. APO, FPO, AK, HI, CN, VI, GU, and foreign orders are subject to additional shipping charges. NOTE: Due to publishing lead-times, product prices and specifications are subject to change without notice.


```

RESS[43];:GOSUB300:SA=A
D:GOSUB1040:IF F THEN18
0
GF 190 PRINT"[BLK]{2 SPACES}EN
DING ADDRESS[43]";:GOSUB
300:EA=AD:GOSUB1030:IF
[SPACE]F THEN190
KR 200 INPUT"[3 DOWN]{BLK}CLEA
R WORKSPACE [Y/N][43]";A
$:IF LEFT$(A$,1)<>"Y"TH
EN220
PG 210 PRINT"[2 DOWN]{BLU}WORK
ING...";:FORI=BS TO BS+
EA-SA+7:POKE I,0:NEXT:P
RINT"DONE"
DR 220 PRINTTAB(10)"[2 DOWN]
{BLK}{RVS} MLX COMMAND
[SPACE]MENU [DOWN][43]";
PRINT T$"[RVS]E[OFF]INTE
R DATA"
BD 230 PRINT T$"[RVS]D[OFF]ISP
LAY DATA":PRINT T$
[RVS]L[OFF]OAD FILE"
JS 240 PRINT T$"[RVS]S[OFF]AVE
FILE":PRINT T$"[RVS]Q
[OFF]UIT[2 DOWN]{BLK}"
JH 250 GET A$:IF A$=N$ THEN250
HK 260 A=0:FOR I=1 TO 5:IF A$=
MID$( "EDLSQ",I,1)THEN A
=I:I=5
FD 270 NEXT:ON A GOTO420,610,6
90,700,280:GOSUB1060:GO
TO250
EJ 280 PRINT"[RVS] QUIT ":INPU
T"[DOWN][43]ARE YOU SURE
[Y/N]";A$:IF LEFT$(A$,
1)<>"Y"THEN220
EM 290 POKE SD+24,0:END
JX 300 IN$=N$:AD=0:INPUTIN$:IF
LEN(IN$)<4THENRETURN
KF 310 B$=IN$:GOSUB320:AD=A:B$
=MID$(IN$,3):GOSUB320:A
D=AD*256+A:RETURN
PP 320 A=0:FOR J=1 TO 2:A$=MID
$(B$,J,1):B=ASC(A$)-C4+
(A$>"0")*C7:A=A*C6+B
JA 330 IF B<0 OR B>15 THEN AD=
0:A=-1:J=2
GX 340 NEXT:RETURN
CH 350 B=INT(A/C6):PRINT MID$(
H$,B+1,1);:B=A-B*C6:PRI
NT MID$(H$,B+1,1);:RETU
RN
RR 360 A=INT(AD/Z6):GOSUB350:A
=AD-A*Z6:GOSUB350:PRINT
A;:
BE 370 CK=INT(AD/Z6):CK=AD-Z4*
CK+Z5*(CK>Z7):GOTO390
PX 380 CK=CK*Z2+Z5*(CK>Z7)+A
JC 390 CK=CK+Z5*(CK>Z5):RETURN
QS 400 PRINT"[DOWN]STARTING AT
[43]";:GOSUB300:IF IN$<>
N$ THEN GOSUB1030:IF F
[SPACE]THEN400
EX 410 RETURN
HD 420 PRINT"[RVS] ENTER DATA
[SPACE]";:GOSUB400:IF IN
$=N$ THEN220
JK 430 OPEN3,3:PRINT
SK 440 POKE198,0:GOSUB360:IF F
THEN PRINT IN$:PRINT"
[UP][5 RIGHT]";
GC 450 FOR I=0 TO 24 STEP 3:B$
=SS:FOR J=1 TO 2:IF F T
HEN B$=MID$(IN$,I+J,1)
HA 460 PRINT"[RVS]"B$";:IF I<
24THEN PRINT"[OFF]";
HD 470 GET A$:IF A$=N$ THEN470
FK 480 IF (A$>"/"AND A$<".")OR(A
$>"0"AND A$<"G")THEN540
GS 485 A=- (A$="M")-2*(A$=",")-
3*(A$=".")-4*(A$="/")-5
*(A$="J")-6*(A$="K")
FX 486 A=A-7*(A$="L")-8*(A$="
")-9*(A$="U")-10*(A$="I
")-11*(A$="O")-12*(A$="
P")
CM 487 A=A-13*(A$=SS):IF A THE
N A$=MID$( "ABCD123E456F
0",A,1):GOTO 540
MP 490 IF A$=R$ AND((I=0)AND(J
=1)OR F)THEN PRINT B$;:
J=2:NEXT:I=24:GOTO550
KC 500 IF A$="HOME" THEN PRI
NT B$;J=2:NEXT:I=24:NEX
T:F=0:GOTO440
MX 510 IF (A$="RIGHT")AND F TH
EN PRINT B$;:GOTO540
GK 520 IF A$<>L$ AND A$<>D$ OR
((I=0)AND(J=1))THEN GOS
UB1060:GOTO470
HG 530 A$=L$+S$+L$:PRINT B$;:
J=2-J:IF J THEN PRINT"
[SPACE]L$;:I=I-3
QS 540 PRINT A$;:NEXT J:PRINT
[SPACE]S$;
PM 550 NEXT I:PRINT:PRINT"[UP]
[5 RIGHT]";:INPUT#3,IN$
:IF IN$=N$ THEN CLOSE3:
GOTO220
QC 560 FOR I=1 TO 25 STEP3:B$=
MID$(IN$,I):GOSUB320:IF
I<25 THEN GOSUB380:A(I
/3)=A
PK 570 NEXT:IF A<>CK THEN GOSU
B1060:PRINT"[BLK]{RVS}
[SPACE]ERROR: REENTER L
INE [43]";F=1:GOTO440
HJ 580 GOSUB1080:B=BS+AD-SA:FO
R I=0 TO 7:POKE B+I,A(I
):NEXT
QQ 590 AD=AD+8:IF AD>EA THEN C
LOSE3:PRINT"[DOWN]{BLU}
** END OF ENTRY **[BLK]
[2 DOWN]";:GOTO700
GQ 600 F=0:GOTO440
QA 610 PRINT"[CLR]{DOWN}{RVS}
[SPACE]DISPLAY DATA ":G
OSUB400:IF IN$=N$ THEN2
20
RJ 620 PRINT"[DOWN]{BLU}PRESS:
[RVS]SPACE[OFF] TO PAU
SE, [RVS]RETURN[OFF] TO
BREAK[43][DOWN]"
KS 630 GOSUB360:B=BS+AD-SA:FOR
I=BTO B+7:A=PEEK(I):GOS
UB350:GOSUB380:PRINT S$
;
CC 640 NEXT:PRINT"[RVS]";:A=CK
:GOSUB350:PRINT
KH 650 F=1:AD=AD+8:IF AD>EA TH
EN PRINT"[DOWN]{BLU}** E
ND OF DATA ***:GOTO220
KC 660 GET A$:IF A$=R$ THEN GO
SUB1080:GOTO220
EQ 670 IF A$=S$ THEN F=F+1:GOS
UB1080
AD 680 ONFGOTO630,660,630
CM 690 PRINT"[DOWN]{RVS} LOAD
[SPACE]DATA ":OP=1:GOTO
710
PC 700 PRINT"[DOWN]{RVS} SAVE
[SPACE]FILE ":OP=0
RX 710 IN$=N$:INPUT"[DOWN]FILE
NAME[43]";IN$:IF IN$=N$
[SPACE]THEN220
PR 720 F=0:PRINT"[DOWN]{BLK}
[RVS]T[OFF]APE OR [RVS]
D[OFF]ISK: [43]";
FP 730 GET A$:IF A$="T"THEN PR
INT"[T[DOWN]";:GOTO880
HQ 740 IF A$<>"D"THEN730
HH 750 PRINT"D[DOWN]";:OPEN15,8
,15,"I0";:B=EA-SA:IN$="
0";:IN$:IF OP THEN810
SQ 760 OPEN 1,8,8,IN$+"P,W":G
OSUB860:IF A THEN220
FJ 770 AH=INT(SA/256):AL=SA-(A
H*256):PRINT#1,CHR$(AL)
;CHR$(AH);
PE 780 FOR I=0 TO B:PRINT#1,CH
R$(PEEK(BS+I));:IF ST T
HEN800
FC 790 NEXT:CLOSE1:CLOSE15:GOT
O940
GS 800 GOSUB1060:PRINT"[DOWN]
[BLK]ERROR DURING SAVE:
[43]";:GOSUB860:GOTO220
MA 810 OPEN 1,8,8,IN$+"P,R":G
OSUB860:IF A THEN220
GE 820 GET#1,A$,B$:AD=ASC(A$+Z
$)+256*ASC(B$+Z$):IF AD
<>SA THEN F=1:GOTO850
RX 830 FOR I=0 TO B:GET#1,A$:P
OKE BS+I,ASC(A$+Z$):IF(
I<>B)AND ST THEN F=2:AD
=I:I=B
FA 840 NEXT:IF ST<>64 THEN F=3
FQ 850 CLOSE1:CLOSE15:ON ABS(F
>0)+1 GOTO960,970
SA 860 INPUT#15,A$:IF A THEN
CLOSE1:CLOSE15:GOSUB10
60:PRINT"[RVS]ERROR: "A
$
GQ 870 RETURN
EJ 880 POKE183,PEEK(FA+2):POKE
187,PEEK(FA+3):POKE188,
PEEK(FA+4):IFOP=0THEN92
0
HJ 890 SYS 63466:IF(PEEK(783)A
ND1)THEN GOSUB1060:PRIN
T"[DOWN]{RVS} FILE NOT
[SPACE]FOUND ":GOTO690
CS 900 AD=PEEK(829)+256*PEEK(8
30):IF AD<>SA THEN F=1:
GOTO970
SC 910 A=PEEK(831)+256*PEEK(83
2)-1:F=F-2*(A<EA)-3*(A>
EA):AD=A-AD:GOTO930
KM 920 A=SA:B=EA+1:GOSUB1010:P
OKE780,3:SYS 63338
JF 930 A=BS:B=BS+(EA-SA)+1:GOS
UB1010:ON OP GOTO950:SY
S 63591
AE 940 GOSUB1080:PRINT"[BLU]**
SAVE COMPLETED ***:GOT
O220
XP 950 POKE147,0:SYS 63562:IF
[SPACE]ST>0 THEN970
FR 960 GOSUB1080:PRINT"[BLU]**
LOAD COMPLETED ***:GOT
O220
DP 970 GOSUB1060:PRINT"[BLK}
[RVS]ERROR DURING LOAD:
[DOWN][43]";:ON F GOSUB98
0,990,1000:GOTO220
PF 980 PRINT"INCORRECT STARTIN
G ADDRESS ("":GOSUB360:
PRINT")":RETURN
GR 990 PRINT"LOAD ENDED AT "":
AD=SA+AD:GOSUB360:PRINT
D$:RETURN
FD 1000 PRINT"TRUNCATED AT END
ING ADDRESS":RETURN
RX 1010 AH=INT(A/256):AL=A-(A
H*256):POKE193,AL:POKE1
94,AH
FF 1020 AH=INT(B/256):AL=B-(A
H*256):POKE174,AL:POKE1
75,AH:RETURN
FX 1030 IF AD<SA OR AD>EA THEN
1050
HA 1040 IF (AD>511 AND AD<40960

```


**COMPUTER
DISCOUNTS ON
ALL YOUR
COMPUTER NEEDS**

MIBRO COMPANY

**COMPUTER
DISCOUNTS ON
ALL YOUR
COMPUTER NEEDS**

64 WEST 36th ST., NYC, NY 10018

OUR ONLY STORE!! ESTABLISHED SINCE 1950

 COMMODORE 64/20 PC. DREAM OUTFIT OUTFIT INCLUDES: Commodore 64 Keyboard *1541 Disc Drive *13" Color Monitor *Commodore Printer *AC Adapter *Owners Manual *Disc Drive Head Cleaner *Package Of 10 Diskettes \$438 COMPLETE	 COMMODORE 64/20 PC. DELUXE PACKAGE OUTFIT OUTFIT INCLUDES: Commodore 64 Keyboard *1541 Disc Drive *12" Computer Monitor *Printer For Commodore *AC Adapter *Owners Manual *Disc Drive Head Cleaner *Package Of 10 Diskettes \$348 COMPLETE	 COMMODORE 128/20 PC. DELUXE PACKAGE OUTFIT OUTFIT INCLUDES: Commodore 128 Keyboard *1541 Disc Drive *12" Computer Monitor *Commodore Printer *AC Adapter *Owners Manual *Disc Drive Head Cleaner *Package Of 10 Diskettes \$438 COMPLETE	 COMMODORE 128/20 PC. DREAM OUTFIT OUTFIT INCLUDES: Commodore 128 Keyboard *1571 Disc Drive *12" Computer Monitor *Printer For Commodore *AC Adapter *Owners Manual *Disc Drive Head Cleaner *Package Of 10 Diskettes \$498 COMPLETE	 COMMODORE 128/20 PC. PROFESSIONAL OUTFIT OUTFIT INCLUDES: Commodore 128 Keyboard *1571 Disc Drive *Commodore Color Monitor *Commodore Printer *AC Adapter *Owners Manual *Disc Drive Head Cleaner *Package Of 10 Diskettes \$598 COMPLETE
 COMMODORE 128/20 PC. TOP OF THE LINE OUTFIT OUTFIT INCLUDES: Commodore 128 Keyboard *Commodore 1571 Disc Drive *Commodore 1902 Monitor *Commodore MPS1000 Printer *AC Adapter *Owners Manual *Disc Drive Head Cleaner *Package Of 10 Diskettes \$748 COMPLETE	 COMMODORE 64-C/20 PC. PROFESSIONAL OUTFIT OUTFIT INCLUDES: Commodore 64-C Keyboard *1541-C Disc Drive *12" Computer Monitor *Printer For Commodore *AC Adapter *Owners Manual *Package Of 10 Diskettes \$588 COMPLETE	 COMMODORE 64-C/20 PC. TOP OF THE LINE OUTFIT OUTFIT INCLUDES: Commodore 64-C Keyboard *Commodore 1541-C Disc Drive *Commodore 1902-C Monitor *Commodore 803-C Printer *AC Adapter *Owners Manual *Disc Drive Head Cleaner *Package Of 10 Diskettes \$688 COMPLETE	 COMMODORE 128D/20 PC. TOP OF THE LINE OUTFIT OUTFIT INCLUDES: Commodore 128D With Built In 1571 Disc Drive *Commodore CM 2002 Monitor *Commodore MPS1200 Printer *AC Adapter *Owners Manual *Disc Drive Head Cleaner *Package Of 10 Diskettes \$898 COMPLETE	 COMMODORE AMIGA 500 TOP OF THE LINE OUTFIT OUTFIT INCLUDES: Amiga 500 With Built In Drive *Amiga RGB Color Monitor *Printer For Amiga *Package Of 10 Diskettes *Disc Drive Head Cleaner *Owners Manual *USA Guarantee \$848 COMPLETE

'CHOOSE YOUR OWN PACKAGE DEAL'

**MIX & MATCH THE COMPUTER SYSTEM
THAT'S GOOD FOR YOU & ONE OF OUR COMPUTER
SPECIALISTS WILL GIVE YOU A SPECIAL PRICE!**

 BLUE CHIP 20 PIECE OUTFIT IBM/XT COMPATIBLE \$448 FEATURES INCLUDE: 512K Ram Expandable To 640K Ram *8 Expansion Slots *Parallel & Serial Ports *Opt. 20 MB Hard Drive PACKAGE INCLUDES: Blue Chip Keyboard *386K Floppy Drive *12" Computer Monitor *Package Of 10 Diskettes *Disc Drive Head Cleaner *Game Cartridge WITH 20MB HARD DRIVE \$748 WITH 30MB HARD DRIVE \$818	 COMMODORE PC10-1 20 PIECE OUTFIT IBM/XT COMPATIBLE \$498 FEATURES INCLUDE: 512K Ram Expandable To 640K *8 Expansion Slots *Parallel & Serial Ports *Opt. 20 MB Hard Drive PACKAGE INCLUDES: PC10-1 Keyboard *386K Floppy Drive *12" Computer Monitor *Package Of 10 Diskettes *Disc Drive Head Cleaner *Game Cartridge WITH 20MB HARD DRIVE \$748 WITH 30MB HARD DRIVE \$818 SAME PACKAGES AVAILABLE W/ COMMODORE PC10-II ADD \$100	 EPSON EQUITY II 20 PIECE OUTFIT IBM XT COMPATIBLE \$747 FEATURES INCLUDE: 640K Ram *4.77/13 Switchable Megahertz *Parallel & Serial Ports PACKAGE INCLUDES: Equity II Keyboard *386K Floppy Drive *12" Computer Monitor *10 Diskettes *Disc Drive Head Cleaner *Game Cartridge WITH 20MB HARD DRIVE \$949 WITH 30MB HARD DRIVE \$1028	 IMPACT IM-1 20 PIECE OUTFIT/ IBM COMPATIBLE TURBO \$798 FEATURES INCLUDE: Switchable 4.77/10 Megahertz *840K Ram *Parallel & Serial Ports *Clock Back Up *9 Expansion Slots *NEC V20 Processor PACKAGE INCLUDES: Impact Keyboard *Disc Drive *10 Diskettes *Disc Drive Head Cleaner *Owners Manual *AC Adapter *Free Software *12" Computer Monitor *386K Floppy Drive *Game Cartridge WITH 20MB HARD DRIVE \$1098 WITH 30MB HARD DRIVE \$1178
 VENDEX HEAD START IBM XT COMPATIBLE FEATURES INCLUDE: 8088 Processor *4.77/8 Switchable Megahertz *Dual Floppy Drive *7 Expansion Slots *512K Ram Expandable To 768K Ram *Parallel Serial Ports *Mouse Game *Light Pen Port GREATLY DISCOUNTED!! BONUS: OVER \$500 WORTH OF SOFTWARE BONUS: OVER \$1000 WORTH OF COUPONS NO CHARGE	 LEADING EDGE MODEL D/IBM XT COMPATIBLE \$748 FEATURES INCLUDE: 8088 Processor *386K Floppy Drive *Switchable 4.77/10 Megahertz *Opt. 20MB & 30MB Hard Drive PACKAGE INCLUDES: Leading Edge Keyboard *Disc Drive *10 Diskettes *Disc Drive Head Cleaner *Owners Manual *AC Adapter *Free Software *12" Computer Monitor *386K Floppy Disc Drive *Game Cartridge AVAILABLE WITH 20MB/30MB HARD DRIVE	 APPLE II-C COMPLETE ALL IN ONE COMPUTER PACKAGE \$599 COMPLETE PACKAGE INCLUDES: Apple II-C *Apple Disc Drive *12" Computer Monitor Owners Manual *Disc Drive Head Cleaner *AC Adapter *Package Of 10 Diskettes	 AMIGA COMMODORE AMIGA 2000 CALL FOR NEW LOW PRICE! FEATURES INCLUDE: 1 MB Memory Expandable To 9 MB *Built-In Serial Centronics *RGB *Video Ports *Built-In Mouse ALSO AVAILABLE: AMIGA 2001 *MONITOR *3.5" INTERNAL DRIVE *BRIDGE CORD *HARD DRIVE CONTROLLER *2 MB RAM EXPANDER

NEW PRODUCTS FROM

COMMODORE 128D
 FEATURES INCLUDE: 128K Ram Memory *Built In 5" Double Sided Floppy Drive *Detachable 128 Keyboard
CALL FOR SPECIAL LOW PRICES!!

COMMODORE 1581
 FEATURES INCLUDE: 3.5" 380K Double Density Disc Drive For Use With Commodore Computers
CALL FOR SPECIAL LOW PRICES!!

COMMODORE CM-2002
 FEATURES INCLUDE: High Resolution *RGB Color Monitor For Commodore Computers
CALL FOR SPECIAL LOW PRICES!!

EPSON PRINTERS

*180 cps *8 Directional
 *60 cps Letter Quality
 *24 Pin Printhead Built In 7x7K Buffer
 *LX-86 *EX-1000 *FX-86E
 *LQ-1000 *LQ-2500 *EX-800
 *LQ-800 *CQ-3500 *FX-286E
 *LQ-850 *LQ-1050
**ALL MODELS AVAILABLE
GREATLY DISCOUNTED!!**

OKIMATE 20 COLOR PRINTER GREATLY DISCOUNTED!
 FEATURES INCLUDE: *80 cps *Full Color *40 cps
 *Letter Quality
 AVAILABLE FOR: *IBM *ATARI
 *APPLE *COMMODORE *AMIGA

COMMODORE HARDWARE & SOFTWARE

COMMODORE 1571 Drive
 COMMODORE 1541C Drive
 COMMODORE MPS1000 Printer
 COMMODORE MPS1200 Printer
 COMMODORE MPS803 Printer
 COMMODORE 128 Computer
 COMMODORE 64 Computer
 COMMODORE 1802-C Monitor
 COMMODORE 1902-A Monitor
 COMMODORE 1670 Modem
 COMMODORE 1700 Expander
 COMMODORE 1750 Expander
 COMMODORE 1764 Expander
 COMMODORE 1351 Mouse

**ALL IN STOCK!
GREATLY DISCOUNTED!**

**ORDER NOW!!
PHONE ORDERS ONLY
CALL TOLL FREE**
1 (800) 223-0322
**FOR INFORMATION CALL
(212) 695-7133**

**NEW YORK STATE RESIDENTS CALL
(212) 695-7133/695-7134**

ON ALL PHONE ORDERS PLEASE CALL
MON.-SAT. 10:00AM-7:30PM
SUNDAY 10:00 AM-6:00 PM

Use Master Card, Visa, American Express,
 or Send Money Order, Certified Check.

**WE NOW TAKE DISCOVER &
DINERS CLUB**

MIBRO CO., INC.

64 West 36th Street, New York, N.Y. 10018
 (Between 5th & 6th Avenues)
MON. THRU SAT. 10:00AM-7:30PM SUN. 10AM-6PM

All merchandise brand new factory fresh. Minimum shipping and handling charge \$4.95 Shipping charges non-refundable. For mail orders please call before sending in money order. No money orders will be accepted without orders. All prices subject to change without notice. Quantities may be limited on some items. Refunds within seven days with original packaging and unfilled guarantee card. All orders subject to acceptance and verification. Prices subject to manufacturers increase and or decrease. Not responsible for typographical errors. For information please call customer service, please call between 12:30 pm-6:30 pm. Prices good for mail order only. Pictures are for illustration and may not be exact. Department of Consumer Affairs License No. 800-253.


```

)OR(AD>49151 AND AD<53
248) THEN GOSUB 1000:F=0
:RETURN
HC 1050 GOSUB 1060:PRINT"[RVS]
[SPACE]INVALID ADDRESS
[DOWN][BLK]":F=1:RETU
RN
AR 1060 POKE SD+5,31:POKE SD+6
,208:POKE SD,240:POKE
[SPACE]SD+1,4:POKE SD+
4,33
DX 1070 FOR S=1 TO 100:NEXT:GO
TO 1090
PF 1080 POKE SD+5,8:POKE SD+6,
240:POKE SD,0:POKE SD+
1,90:POKE SD+4,17
AC 1090 FOR S=1 TO 100:NEXT:PO
KE SD+4,0:POKE SD,0:PO
KE SD+1,0:RETURN

```

Program 2: MLX For Commodore 128

```

AE 100 TRAP 960:POKE 4627,128:
DIM NL$,A(7)
XP 110 Z2=2:Z4=254:Z5=255:Z6=2
56:Z7=127:BS=256*PEEK(4
627):EA=65280
FB 120 BE$=CHR$(7):RT$=CHR$(13
):DL$=CHR$(20):SP$=CHR$
(32):LF$=CHR$(157)
KE 130 DEF FNHB(A)=INT(A/256):
DEF FNLB(A)=A-FNHB(A)*2
56:DEF FNAD(A)=PEEK(A)+
256*PEEK(A+1)
JB 140 KEY 1,"A":KEY 3,"B":KEY
5,"C":KEY 7,"D":VOL 15
:IF RGR(0)=5 THEN FAST
FJ 150 PRINT"[CLR]"CHR$(142):C
HR$(8):COLOR 0,15:COLOR
4,15:COLOR 6,15
GQ 160 PRINT TAB(12)"[RED]
[RVS]{2 SPACES}[9 0]
[2 SPACES]"RT$;TAB(12)"
[RVS]{2 SPACES}[OFF]
[BLU] 128 MLX [RED]
[RVS]{2 SPACES}"RT$;TAB
(12)"[RVS]{13 SPACES}
[BLU]"
FE 170 PRINT"[2 DOWN]
[3 SPACES]COMPUTE!'S MA
CHINE LANGUAGE EDITOR
[2 DOWN]"
DK 180 PRINT"[BLK]STARTING ADD
RESS[43]":GOSUB 260:IF
[SPACE]AD THEN SA=AD:EL
SE 180
FH 190 PRINT"[BLK]{2 SPACES}EN
DING ADDRESS[43]":GOSUB
260:IF AD THEN EA=AD:E
LSE 190
MF 200 PRINT"[DOWN][BLK]CLEAR
[SPACE]WORKSPACE [Y/N]?
[43]":GETKEY AS:IF AS<>"
Y" THEN 220
QH 210 PRINT"[DOWN][BLU]WORKIN
G...":BANK 0:FOR A=BS
[SPACE]TO BS+(EA-SA)+7:
POKE A,0:NEXT A:PRINT"D
ONE"
DC 220 PRINT TAB(10)"[DOWN]
[BLK]{RVS} MLX COMMAND
[SPACE]MENU [43][DOWN]":
PRINT TAB(13)"[RVS]E
[OFF]NTER DATA"RT$;TAB(
13)"[RVS]D[OFF]ISPLAY D
ATA"RT$;TAB(13)"[RVS]L
[OFF]OAD FILE"
HB 230 PRINT TAB(13)"[RVS]S

```

```

[OFF]AVE FILE"RT$;TAB(1
3)"[RVS]C[OFF]ATALOG DI
SK"RT$;TAB(13)"[RVS]Q
[OFF]UIT[DOWN][BLK]"
AP 240 GETKEY AS:A=INSTR("EDLS
CQ",AS):ON A GOTO 340,5
50,640,650,930,940:GOSU
B 950:GOTO 240
SX 250 PRINT"STARTING AT":GOS
UB 260:IF(AD<>0)OR(AS=N
L$)THEN RETURN:ELSE 250
AS=NL$:INPUT AS:IF LEN(
AS)=4 THEN AD=DEC(AS)
PP 270 IF AD=0 THEN BEGIN:IF A
S<>NL$ THEN 300:ELSE RE
TURN:BEND
MA 280 IF AD<SA OR AD>EA THEN
[SPACE]300
PM 290 IF AD>511 AND AD<65280
[SPACE]THEN PRINT BE$;:
RETURN
SQ 300 GOSUB 950:PRINT"[RVS] I
NVALID ADDRESS [DOWN]
[BLK]":AD=0:RETURN
RD 310 CK=FNHB(AD):CK=AD-24*CK
+25*(CK>27):GOTO 330
DD 320 CK=CK*2+25*(CK>27)+A
AH 330 CK=CK+25*(CK>25):RETURN
QD 340 PRINT BE$:"[RVS] ENTER
[SPACE]DATA ":GOSUB 250
:IF AS=NL$ THEN 220
JA 350 BANK 0:PRINT:F=0:OPEN 3
,3
BR 360 GOSUB 310:PRINT HEX$(AD
)+":":IF F THEN PRINT
[SPACE]LS:PRINT"[UP]
[5 RIGHT]";
QA 370 FOR I=0 TO 24 STEP 3:BS
=SP$:FOR J=1 TO 2:IF F
[SPACE]THEN BS=MID$(LS,
I+J,1)
PS 380 PRINT"[RVS]"BS+LF$:IF
[SPACE]I<24 THEN PRINT"
[OFF]";
RC 390 GETKEY AS:IF (AS>"/" AN
D AS<"") OR(AS="0" AND
AS<"G") THEN 470
AC 400 IF AS="+" THEN AS="E":G
OTO 470
QB 410 IF AS="-" THEN AS="F":G
OTO 470
FB 420 IF AS=RT$ AND ((I=0) AN
D (J=1) OR F) THEN PRIN
T BS;J=2:NEXT I=24:GOT
O 480
RD 430 IF AS="{HOME}" THEN PRI
NT BS;J=2:NEXT I=24:NEX
T:F=0:GOTO 360
XB 440 IF (AS="{RIGHT}") AND F
THEN PRINT BS+LF$;:GOT
O 470
JP 450 IF AS<>LF$ AND AS<>DL$
[SPACE]OR ((I=0) AND (J
=1)) THEN GOSUB 950:GOT
O 390
PS 460 AS=LF$+SP$+LF$:PRINT BS
+LF$;J=2-J:IF J THEN P
RINT LF$;:I=I-3
GB 470 PRINT AS;:NEXT J:PRINT
[SPACE]SP$;
HA 480 NEXT I:PRINT:PRINT"[UP]
[5 RIGHT]";:LS=""
DP 490 FOR I=1 TO 25 STEP 3:GE
T#3,AS,BS:IF AS=SP$ THE
N I=25:NEXT:CLOSE 3:GOT
O 220
BA 500 AS=AS+BS:A=DEC(AS):MID$
(LS,I,2)=AS:IF I<25 THE
N GOSUB 320:A(I/3)=A:GE
T#3,AS

```

```

AR 510 NEXT I:IF A<>CK THEN GO
SUB 950:PRINT:PRINT"
[RVS] ERROR: REENTER LI
NE ":F=1:GOTO 360
DX 520 PRINT BE$B=BS+AD-SA:FO
R I=0 TO 7:POKE B+I,A(I
):NEXT I
XB 530 F=0:AD=AD+8:IF AD<=EA T
HEN 360
CA 540 CLOSE 3:PRINT"[DOWN]
[BLU]** END OF ENTRY **
[BLK]{2 DOWN}":GOTO 650
MC 550 PRINT BE$;"[CLR][DOWN]
[RVS] DISPLAY DATA ":GO
SUB 250:IF AS=NL$ THEN
[SPACE]220
JF 560 BANK 0:PRINT"[DOWN]
[BLU]PRESS: [RVS]SPACE
[OFF] TO PAUSE, [RVS]RE
TURN[OFF] TO BREAK[43]
[DOWN]"
XA 570 PRINT HEX$(AD)+":":GOS
UB 310:B=BS+AD-SA
DJ 580 FOR I=B TO B+7:A=PEEK(I
):PRINT RIGHT$(HEX$(A),
2);SP$;GOSUB 320:NEXT
[SPACE]I
XB 590 PRINT"[RVS]";RIGHT$(HEX
$(CK),2)
GR 600 F=1:AD=AD+8:IF AD>EA TH
EN PRINT"[BLU]** END OF
DATA **":GOTO 220
EB 610 GET AS:IF AS=RT$ THEN P
RINT BE$;GOTO 220
QK 620 IF AS=SP$ THEN F=F+1:PR
INT BE$;
XS 630 ON F GOTO 570,610,570
RF 640 PRINT BE$"[DOWN][RVS] L
OAD DATA ":OP=1:GOTO 66
0
BP 650 PRINT BE$"[DOWN][RVS] S
AVE FILE ":OP=0
DM 660 F=0:F$=NL$:INPUT"FILENA
ME[43]";F$:IF F$=NL$ THE
N 220
RF 670 PRINT"[DOWN][BLK]{RVS}T
[OFF]APE OR [RVS]D[OFF]
ISK: [43]";
SQ 680 GETKEY AS:IF AS="T" THE
N 850:ELSE IF AS<>"D" T
HEN 680
SP 690 PRINT"DISK[DOWN]":IF OP
THEN 760
EG 700 DOPEN#1,(F$+",P"),W:IF
[SPACE]DS THEN AS=DS$;G
OTO 740
JH 710 BANK 0:POKE BS-2,FNHB(S
A):POKE BS-1,FNHB(SA):P
RINT"SAVING ":F$:PRINT
MC 720 FOR A=BS-2 TO BS+EA-SA:
PRINT#1,CHR$(PEEK(A));:
IF ST THEN AS="DISK WRI
TE ERROR":GOTO 750
GC 730 NEXT A:CLOSE 1:PRINT"
[BLU]** SAVE COMPLETED
[SPACE]WITHOUT ERRORS *
**":GOTO 220
RA 740 IF DS=63 THEN BEGIN:CLO
SE 1:INPUT"[BLK]REPLACE
EXISTING FILE [Y/N][43]
":AS:IF AS="Y" THEN SCR
ATCH(F$):PRINT:GOTO 700
:ELSE PRINT"[BLK]":GOTO
660:BEND
GA 750 CLOSE 1:GOSUB 950:PRINT
"[BLK]{RVS} ERROR DURIN
G SAVE: [43]":PRINT AS;G
OTO 220
FD 760 DOPEN#1,(F$+",P"):IF DS
THEN AS=DS$:F=4:CLOSE
[SPACE]1:GOTO 790

```


COMPUTER WORLD

AUTHORIZED DEALER FOR MOST MAJOR BRANDS

HOLIDAY SALE!!

4017 BROADWAY • E. OF STEINWAY ST. COR.
LONG ISLAND CITY, NEW YORK 11103

FOR INFORMATION
CALL:

718- 726-8118

MONDAY-FRIDAY 10:30-7pm SUNDAY 11-6pm



582 MIDDLE NECK ROAD
GREAT NECK, NEW YORK 11023

FOR INFORMATION
CALL:

516- 829-2188

MONDAY-FRIDAY 11-7pm SUNDAY 11-6pm

PHONE AND MAIL ORDERS ONLY: CALL TOLL FREE 1-800-234-5888

ALL COMPUTERS & PERIPHERALS COMPLETE
WITH AC ADAPTOR, OWNERS MANUAL & ALL
CONNECTING CABLES.

ALL MERCHANDISE IS BRAND NEW & DIRECT
FROM FACTORY. ALL COMPLETE WITH
MFG. U.S.A. WARRANTY.

commodore COMPUTER PACKAGES

64C COMPLETE PACKAGE



- Commodore 64C
- Commodore 1541 Disk Drive
- Commodore Color Printer
- 12" Monitor
- 10 Disks

\$319

128C COMPLETE PACKAGE



- Commodore 128
- Commodore 1541 Disk Drive
- Commodore Color Printer
- 12" Monitor
- 10 Disks

\$419

TO SUBSTITUTE
1571 FOR 1541
ADD \$60.00

128C DELUXE PACKAGE



- Commodore 128 Computer
- Commodore 1571 Disk Drive
- Commodore 1902 Color Monitor
- Commodore 80 Column Printer

\$659

64C COLOR PACKAGE



- Commodore 64C Computer
- Commodore 1541C Disk Drive
- Commodore Color Printer
- Color Monitor

\$469

COMMODORE 128
PERSONAL COMPUTER

\$218

COMMODORE 64C NEW!

CALL FOR PRICE!

• 64K RAM Powered Home Computer
• WITH GEOS PROGRAM

COMMODORE 128D NEW!

With Built-In
1571 Disk Drive!!

• CALL FOR LOW PRICE •

EXPANSION
MODELS AVAILABLE!
Call For Low Prices!!

VENDEX IBM PC/XT COMPATIBLE

- 512K • 2 360 Drives
- Parallel Serial Ports
- 12" Monitor

\$839

1,000.00
WORTH OF
SOFTWARE
INCLUDED!!

IBM - PC/XT COMPATIBLE PACKAGES

EPSON EQUITY II PACKAGE
IBM PC/XT COMPATIBLE

\$879

- Equity II Computer • 640K Ram
- 360K Disk Drives • 12" High Resolution • Serial & Parallel Ports

BLUE CHIP IBM PC/XT COMPATIBLE PACKAGE

\$519

- Blue Chip Keyboard • 512K Expandable To 640K • 6 Expansion Slots Optional 20MB Hard Drive • All Hook-Up Cables & Adaptors
- Package Of 10 Diskettes • 12" Monitor

IBM TURBO IBM PC/XT COMPATIBLE

\$649

- 640K • 2 Drive/360K • 8088/2 CPU
- 4.77 8 MHZ • 12" High Resolution Monitor • Clock • Calendar • Date

COMMODORE IBM PC/XT/AT COMPATIBLE

\$999

- 640K RAM
- 1.2 MB
- 12" High Resolution Monitor
- 200 Watt Power Pack

CALL!!

SAME PACKAGE 20MB HARD DRIVE \$1299.00

COMMODORE PERIPHERALS AND PRINTERS

- New! 1541C Disk Drive..... **\$155.00**
- 1571 Disk Drive..... **\$209.00**
- 1581 Disk Drive..... **\$ CALL**
- 1802 Monitor..... **\$175.00**
- 1902 80 Column RGB Color Monitor..... **\$219.00**
- 1670 Modem..... **\$115.00**
- 1750 Expansion Module 512K..... **\$165.00**

• Expansion Modules Available •

- 1764 Expansion Module..... **\$ CALL**
- MPS-803..... **\$109.00**
- MPS-1000..... **\$179.00**
- MPS-1200..... **\$209.00**

LARGE SELECTION OF PRINTERS IN STOCK!!

- PANASONIC 1080i..... **\$169.00**
- 1090i..... **\$179.00**
- STAR SG-10C..... **\$169.00**
- NX-10..... **\$165.00**
- NX-10C..... **\$175.00**
- OKIDATA 120..... **\$195.00**
- 20 W/Plug n' Print..... **\$188.00**
- EPSON LX-86 Printer..... **\$199.00**
- FX-286E Printer..... **\$449.00**

MODEMS IN STOCK! IBM COMMODORE

- XETEC Junior Interface..... **\$34.95**
- XETEC Senior Interface..... **\$54.95**
- F-15..... **\$18.95**
- Pittstop..... **\$12.95**

SOFTWARE

AMIGA 1000

- 512K • 1080 Monitor
- Disk Drive

CALL FOR LOW PRICE!

AMIGA 500

- 512K • 3.5 Disk Drive
- Mouse • 1080 Monitor

CALL FOR LOW PRICE!



AMIGA 2000

- 1MB • Expandable To 9MB • Serial Centronics
- RGB • Video Ports • Built-In Mouse • 1080 Monitor

CALL FOR LOW PRICE!

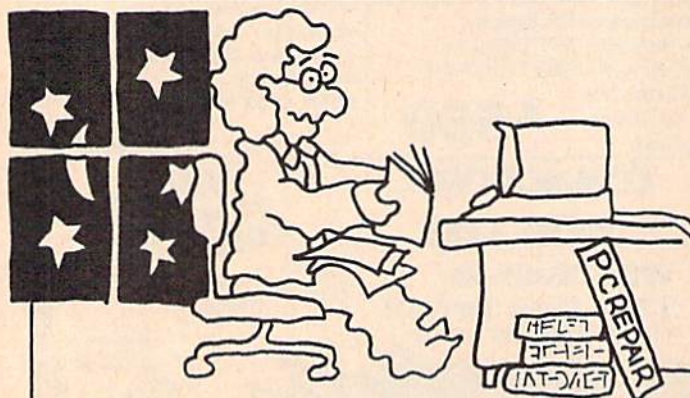
Mastercard, Visa, American Express, Diner's Club, Carte Blanche, Discover Card, Certified And Bank Checks Welcome. C.D.'s Accepted Upon Approval. No Additional Surcharge For Credit Card Orders. Non-Certified Checks & Money Orders Must Wait For Clearance. N.Y. Residents Add Applicable Sales Tax. We Are Not Responsible For Typographical Errors. Prices And Availability Are Subject To Change Without Notice. To Return Defective Merchandise Call For Authorization Number. IBM PC/XT Are Registered Trademarks Of International Business Machine Corp. All Orders Can Be Shipped Air Express.




```

PX 770 GET#1,A$,B$:CLOSE 1:AD=
ASC(A$)+256*ASC(B$):IF
{SPACE}AD<>SA THEN F=1:
GOTO 790
KB 780 PRINT"LOADING ":F$:PRIN
T:BLOAD(F$),B0,P(B$):AD
=SA+FNAD(174)-BS-1:F=-2
*(AD<EA)-3*(AD>EA)
RQ 790 IF F THEN 800:ELSE PRIN
T"[BLU]** LOAD COMPLETE
D WITHOUT ERRORS ***":GO
TO 220
ER 800 GOSUB 950:PRINT"[BLK]
[RVS] ERROR DURING LOAD
: [43]:ON F GOSUB 810,8
20,830,840:GOTO220
QJ 810 PRINT"INCORRECT STARTIN
G ADDRESS ("HEX$(AD):"
)":RETURN
DP 820 PRINT"LOAD ENDED AT ":H
EX$(AD):RETURN
EB 830 PRINT"TRUNCATED AT ENDI
NG ADDRESS ("HEX$(EA)")
":RETURN
FP 840 PRINT"DISK ERROR ":A$:R
ETURN
KS 850 PRINT"TAPE":AD=POINTER(
F$):BANK 1:A=PEEK(AD):A
L=PEEK(AD+1):AH=PEEK(AD
+2)
XX 860 BANK 15:SYS DEC("FF68")
,0,1:SYS DEC("FFBA"),1,
1,0:SYS DEC("FFBD"),A,A
L,AH:SYS DEC("FF90"),12
8:IF OP THEN 890
FG 870 PRINT:A=SA:B=EA+1:GOSUB
920:SYS DEC("E919"),3:
PRINT"SAVING ":F$:
AB 880 A=BS:B=BS+(EA-SA)+1:GOS
UB 920:SYS DEC("EA18"):
PRINT"[DOWN]{BLU]** TAP
E SAVE COMPLETED ***":GO
TO 220
CP 890 SYS DEC("E99A"):PRINT:I
F PEEK(2816)=5 THEN GOS
UB 950:PRINT"[DOWN]
{BLK}{RVS} FILE NOT FOU
ND ":GOTO 220
GQ 900 PRINT"LOADING ...{DOWN}
":AD=FNAD(2817):IF AD<>
SA THEN F=1:GOTO 800:EL
SE AD=FNAD(2819)-1:F=-2
*(AD<EA)-3*(AD>EA)
JD 910 A=BS:B=BS+(EA-SA)+1:GOS
UB 920:SYS DEC("E9FB"):
IF ST>0 THEN 800:ELSE 7
90
XB 920 POKE193,FNLB(A):POKE194
,FNLB(A):POKE 174,FNLB(
B):POKE 175,FNLB(B):RET
URN
CP 930 CATALOG:PRINT"[DOWN]
{BLU]** PRESS ANY KEY F
OR MENU ***":GETKEY A$:G
OTO 220
MM 940 PRINT BE$"{RVS} QUIT
[43]:RT$:"ARE YOU SURE
{SPACE}[Y/N]?" :GETKEY A
$:IF A$<>"Y" THEN 220:EL
SE PRINT"[CLR":BANK 1
5:END
JE 950 SOUND 1,500,10:RETURN
AF 960 IF ER=14 AND EL=260 THE
N RESUME 300
MK 970 IF ER=14 AND EL=500 THE
N RESUME NEXT
KJ 980 IF ER=4 AND EL=780 THEN
P=4:A$=DSS:RESUME 800
DQ 990 IF ER=30 THEN RESUME:EL
SE PRINT ERR$(ER):" ERR
OR IN LINE":EL

```



Down Time Got You Down?

Get on line *FAST* with TRIAD COMPUTERS

Most computers and disk drives are repaired and shipped within 72 hours!

C-64 Computer
 C-128 Computer
 1541 Drive Logic repair
 1571 Drive Logic repair
 1541 or 1571 Permanent Fix
 (Alignment and modification to stay in alignment)
 1702, 1802, 1902
 1541 alignment (only)
 Commodore Printers
 C-64 Power Supply
 C-128 ROM UpGrade
 1571 ROM UpGrade
 AMIGA Repairs

With 30 Day
 Warranty Repair
 \$59.00
 89.00
 69.00
 79.00
 69.00

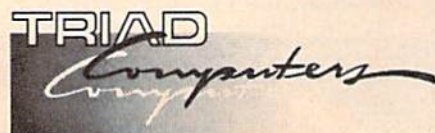
Repair With
 1-Year Warranty
 \$89.00
 129.00
 99.00
 119.00
 99.00

CALL
 Just 29.95
 CALL
 ONLY 29.95
 ONLY 55.00
 ONLY 45.00
 CALL

For fast, expert service . . . Just call our toll free number today!

1-800-624-6794

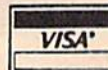
1-800-521-6957



(For your convenience, have your equipment serial number and credit number ready. Checks and money orders also accepted). Add \$7.50 for shipping — includes two-day air service anywhere in the Continental USA. For APO-FPO and P.O. Box addresses, add \$15.00 for shipping (excluding air freight).

FREE Permanent Fix

A \$69.00 value — includes alignment and modification to stay in alignment. FREE with any 1541 or 1571 one year warranty repair.



3402-E W. Wendover Ave., Greensboro, N.C. 27407 1-800-624-6794 or (919) 299-0391

Classified

SOFTWARE

FREE SOFTWARE for C64, C128, IBM & CPM
Send SASE for info (specify computer) to:
PUBLIC DOMAIN USERS GROUP
PO Box 1442-A2, Orange Park, FL 32067

FREE PUBLIC DOMAIN SOFTWARE - Request
free catalog or send \$2 for sample disk and
catalog (refundable). C64-128 CALOKE IND.,
Dept. JK, Box 18477, KC, MO 64133

More than 200 great ML routines for 64 and
128, ready to add to your own programs, in
COMPUTE! Books' MACHINE LANGUAGE
ROUTINES FOR THE COMMODORE 64/128.
Explanations, uses, commented source code. 585
pages, \$18.95. Check your local bookstore or call
(800) 346-6767.

THOUSANDS OF PD PROGRAMS FOR
C64/128! We have Games, Utilities, Music and
much more! For information write: Lightspeed
Software, POB 7037, Chesapeake, VA 23323

FREE SOFTWARE FOR C64 (disk Only)
Games, Educ, Home, Business, Utilities, Music.
Free Brochure! RVH Publications, Dept. S2,
718 Alder Circle, Virginia Beach, VA 23462

RENT 64/128 SOFTWARE! 100's of disks.
Lowest prices. No deposit or fee. Free
catalog. CENTSIBLE SOFTWARE, PO Box 930,
St. Joseph, Michigan 49085 (616) 982-0327

ARB BULLETIN BOARD FOR THE 64/128
300-1200, Punter/Xmodem, Color Graphics,
NETWORK, 90 SIGS, 36 Access Levels, Vote,
Email, Quiz, SOURCE CODE & MORE! \$54.95
(BBS) 718-645-1979 * (Voice) 718-336-2343
L&S COMPUTERS, PO Box 392, Bklyn, NY 11229

COMMODORE: TRY BEFORE YOU BUY.
Best selling games, utilities, educational, +
classics and new releases. 100's of titles.
Visa/MC. Free brochure. RENT-A-DISC, Frederick
Bldg. #345, Hunt'n, WV 25701 (304) 529-3232

COMPUTE!'s Gazette Classified is a low-cost way to tell over 275,000 microcomputer owners about your product or service.

Rates: \$25 per line, minimum of four lines. Any or all of the first line set in capital
letters at no charge. Add \$15 per line for boldface words, or \$50 for the entire ad set
in boldface (any number of lines.) Inquire about display rates.

Terms: Prepayment is required. Check, money order, American Express, Visa, or
MasterCard is accepted. Make checks payable to COMPUTE! Publications.

Form: Ads are subject to publisher's approval and must be either typed or legibly
printed. One line equals 40 letters and spaces between words. Please underline
words to be set in boldface.

General Information: Advertisers using post office box numbers in their ads must
supply permanent address and telephone numbers. Orders will not be acknowl-
edged. Ad will appear in next available issue after receipt.

Closing: 3rd of the third month preceding cover date (e.g., June issue closes March
3rd). Send order and remittance to: Harry Blair, Classified Manager, COMPUTE!'s
Gazette, P.O. Box 5406, Greensboro, NC 27403. To place an ad by phone, call Harry
Blair at (919) 275-9809.

Notice: COMPUTE! Publications cannot be responsible for offers or claims of
advertisers, but will attempt to screen out misleading or questionable copy.

Dear Brethren in Christ. I have inputted
the King James New Testament using Spinnaker
Word Pro. Send \$15.00 for copy of my disks.
Rev. Marshall, P.O. Box 36, Pomona, California
91769

FINALLY, TRUE ARTIFICIAL INTELLIGENCE!!
64 & 128 users...have a talk with your
computer! Converse for hours with "BILL".
TRUE SIMULATED INTELLIGENCE, ONLY \$10.
PIRHOUE, 117 E. 35th, Covington, KY 41015

C64/128 FINEST PUBLIC DOMAIN PROGRAMS
Pretested quality programs * Most \$1.50 *
* On Disk * YOU pick the programs that YOU
want!!! Free diskfull of programs with first
order! For a list + Description send SASE to:
JLH Co, Dept. G, Box 67021, Topeka, KS 66667

CONTEST SOLVING SOFTWARE. Based on M-W
dictionary. All Playoff & Tiebreakers. 2 disks,
3 systems, 45 page manual. Send SASE (#10) to:
STATGAM, 5668 Chagrin, Mentor, OH 44060

Make your C128 IBM COMPATIBLE!
Run IBM software in IBM formats!
Programs and instructions \$20. Hardware not
included. "Ways to meet girls without really
trying"-with pull-down menu (it really works!)
for \$14.95. To order write: Edward Lyen,
2191 Mission Street, San Francisco,
California 94110

Win LOTTO! use C64-Math. Sys. to Improve
ODDS 550% Disk \$12.95 Specify Pick 6 or
7 number group Write to: Wheel 20
Box #244, Berwick IL 61417

HARDWARE

COMMODORE 64 REPAIR \$39.95. Parts/labor
incl. LOW COST CHIPS to fix your own unit.
6510/6526-\$9.95, PLA/82S100-\$12.50 and
many others. Send for parts/chips catalog.
Kasara Inc. 33 Murray Hill Dr., Spring
Valley, NY 10977, 800-248-2983, 914-356-3131

12 volt C64 Power Supply \$42.95 ppd!
Take it anywhere! Also 1541 12 volt mod's!
DEVCOM, 336 Joya Loop, White Rock, NM 87544
(505) 672-9742

MISCELLANEOUS

GM CAR - C64 USER PORT LINK

Engine trouble codes & sensor programs
Executive Electronics, Inc. 938 Main St.
Yarmouthport, MA 02675 (617) 362-3694

**MAKE FAST EASY MONEY STUFFING ENVE-
LOPES** How many can you fill for \$1 each? Earn
even more with home computer! Send SASE to
PAC Data, POB 9721 Richmond, VA 23228.

Now! **Commodore Qualified Repairs!**
C64:\$45, 1541:\$50, SX64:\$65, C128:\$50, 1571:\$55.
Buy Sell Trade New/Used - Fast Service! 30 day
wnty! Mom & Pop's Computer Shop, RR2, Box
119, Cainsville, MO 64632 (816) 872-6311

FREE GIFT!!!
HAVE FUN WITH YOUR MODEM!
1-818-840-8066 (300/1200 BAUD)
1-818-842-3322 (300/1200 BAUD)

PERSONAL COMPUTER OWNERS CAN EARN
\$1000 to \$5000 monthly offering simple
services part time. FREE list of 100 best.
Write: A.I.M.O.F., Box 60369, San Diego,
California 92106

THE BASEBALL DATABASE

LET YOUR COMPUTER KEEP TRACK OF YOUR TEAM'S BASEBALL STATS FOR YOU!

■ **EASY TO USE** • Menu driven • clear screen directions
• detailed user's manual • easy data entry • fast stats
retrieval

■ **COMPREHENSIVE** • 23 player and 22 pitching stats
• inning box scores • totals, cums, averages, etc. calculated
• up to 30 players • unlimited games

■ **DETAILED PRINTED REPORTS** • Player rosters • win/
loss records • game summaries • player, pitching and team
cums • player and pitcher histories • and a lot more

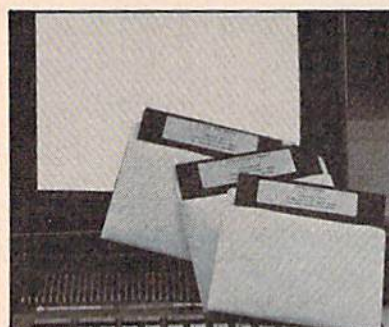
We offer a 15-day money back guarantee, so don't delay. Call
us with your Visa/Mastercard order or send us the coupon
below with your check or MO. Program specs and details are
available upon request, if you would like more information.

___ BBDB for Commodore 64/128 @ \$39.95 \$ _____
___ BBDB for Apple IIe/IIc @ \$49.95 \$ _____
Shipping & Handling \$ 2.50
☐ Visa ☐ MC ☐ Chk/MO Total \$ _____
No. _____ Exp. Date _____
Tel: (_____) _____
Name _____
Address _____
City _____ ST _____ ZIP _____

JACOBSEN SOFTWARE DESIGNS

Attn: Order - CPG
1590 E. 43rd Ave. Eugene, Oregon 97405
Phone: (503) 343-8030

SAVE OVER 35%



PLUS 4™ SOFTWARE

Turn your home computer into a household finance organizer, learning center, and entertainment center. The Plus 4™ Software Package contains three floppy diskettes compatible with the Commodore® Plus 4™ computer. Due to special arrangements with the manufacturer, you save.

Software Package Contains: Fun and Games disk with more than 20 imaginative games for the whole family to enjoy, plus music and graphics selections. The second disk is *Utilities/Finance*. It can help you organize and maintain files, lists and information. The Finance section is designed to help you organize your personal and home finances and investments. The third disk is *Education*. A fun way for students to learn more about math, language, geography, science, history and more.

Compute the Savings! You don't need a computer to figure out this is an exceptional value...one that everyone in the family will enjoy.

Mfr. List Price **\$30.00**
\$19
 Liquidation
 Price/Set
 Item H-3267-7235-294
 S/H: \$4.00/set

Credit card customers can order by phone, 24 hours a day, 7 days a week.
Toll-Free: 1-800-328-0609

SEND TO:

COMB Authorized Liquidator
 1405 Xenium Lane N/Minneapolis, MN 55441-4494

Send Plus/4™ Software Set(s) Item H-3267-7235-294 at \$19 per set, plus \$4 per set for insured shipping, handling. (Minnesota residents add 6% sales tax. Sorry, no C.O.D. orders.)

☐ My check or money order is enclosed. (No delays in processing orders paid by check.)

PLEASE CHECK: ☐ VISA ☐ MC ☐ DISC ☐ AMEX

Acct. No. _____ Exp. _____
 PLEASE PRINT CLEARLY

Name _____ Apt. # _____

Address _____

City _____

State _____ ZIP _____

Phone (____) _____
 Sign Here _____

WIN YOUR STATE LOTTO WITH YOUR COMPUTER!

"The home computer is the most powerful tool ever held by man" (or woman for that matter)!

Are you still wasting money with random guesswork?

This amazing program will analyze the past winning lotto numbers and produce a powerful probability study on easy to read charts in just seconds. With single key presses from a menu you'll see trends, patterns, odd/even, sum totals, number frequency and more on either your screen or printer. Includes automatic number wheeling, instant updating and a built-in tutorial to get you started fast and easy!

CHECKS & CHARGE CARDS ACCEPTED WITH NO SURCHARGE.

All orders shipped same day (except personal checks).

APPLE & IBM Compatibles \$24.95
 Macintosh (requires M/S Basic) \$29.95
 Commodore, Atari & Radio Shack \$21.95
 Back-Up Copies - \$3.00

Please add \$2.00 for shipping and handling.
 Phone credit given with orders.

(513) 233-2200

SOFT-BYTE

P.O. Box 5701, Forest Park
 Dayton, Ohio 45405



CG

DUST COVERS

SATISFACTION GUARANTEED

- ★ CUSTOM MADE TO FIT
- ★ HEAVY 32-oz. VINYL ANTI-STATIC
- ★ EXTENDS EQUIPMENT LIFE
- ★ Choice of Colors Light Tan or Brown

COMPUTERS		PRINTERS	
C-64/Plus 4/C-64C	8.00	Seikosha SP-1000	13.00
C-128	13.00	Comrex 220	13.00
Datasette (C2N)	5.00	C'10h 8510	13.00
Amiga 1000	13.00	Juki 5510	13.00
(W/Amiga Mon. Stacked)	28.00	Imagewriter	13.00
Keyboard only	7.00	Epson JX 80	13.00
Atari 800XL, 130XE	10.00	Epson FX 85/185	13.00
Atari 520 ST	14.00	Okidata 92	13.00
IBM PC/XT	28.00	Citizen MSP 10	13.00
IBM 5051 Keyboard	8.00	C/DPS 1101	16.00
(Dimensions Required for IBM Clones)		Gemini 10 & Star 10's	13.00
		Gemini 15 & Star 15's	16.00
		Atari 1027	13.00
DISK DRIVES		MONITORS	
C-1541, C-1571	8.00	Atari SC 1224RGB	19.00
Amiga 3 1/2" D/Drv	8.00	C-1702, BMC Color	16.00
Amiga 5 1/4" D/Drv	9.00	C-1902/Amiga	19.00
Indust GT, MSD SD-1	8.00	Amdek 500-700	19.00
MSD SD-2	10.00	CM-141 (C-1802)	19.00
Enhancer 2000	8.00	C-1902A/Magnvix 40	19.00
FSD-1	8.00	NEC (State Model)	19.00
Atari 1050	8.00	Magnavox 80 RGB	19.00
		Princeton (State Model)	19.00
PRINTERS		VIDEO RECORDERS	
C-1525/MS 801	10.00	Thompson CM 365-66	19.00
C-1526/MS 802	13.00	Taxan (State Model)	19.00
C-MPS/803, C-1520	8.00	Sakata SC-100	19.00
Panasonic 1090/91	13.00	Zenith (State Model)	19.00
Okidata 120/192	13.00		
Okimate 10/20	8.00		
Epson MX/FX/RX80	13.00		
Epson LX80/C-1000	13.00		

Order by stating MAKE, MODEL and COLOR CHOICE - TAN or BROWN with check or money order plus \$1.50 per item (\$1.50 max.) shipping and handling. Calif. Res. Include 6% + local tax. APO, 2.00/item, Foreign 3.00/item

SPECIAL COVERS WILL BE MADE TO YOUR DIMENSIONS. SEND YOUR REQUIREMENTS FOR OUR LOW PRICE QUOTES.

Crown Custom Covers

24621 PAIGE CIRCLE DEPT. A
 LAGUNA HILLS, CA 92653
 (714) 472-6362

advertiser's index

Reader Service Number/Advertiser	Page
102 Abacus	7
103 Abacus	43
104 ActionSoft Corp.	BC
106 Aprotect	33
107 Aprotect	76
154 The Avalon Hill Game Company	35
108 Berkeley Softworks	2-3
109 Berkeley Softworks	11
110 Central Point Software	47
111 Cheatsheet Products, Inc.	76
112 CompuServe	IBC
113 ComputAbility	101
COMB Authorized Liquidator	116
114 Computer Direct	39-41
115 Computer Mail Order	27
116 Computer Repeats	93
117 Computer World	113
118 Covox, Inc.	69
Crown Custom Covers	115
120 Datel Computers	24-25
121 Electronic Arts	IFC
122 Electronic Arts	19
123 Electronic Arts	21
124 Electronic Arts	23
125 Electronic Arts	63,65,67,69
126 EPYX	4
127 Free Spirit Software, Inc.	107
128 Haynes Publishing	42
119 Gardé	47
129 Intelligent I/O	100
130 Jacobson Software Design	116
131 Ketek	76
132 Lyco Computer	48-51
McGraw Hill Continuing Education	17
133 M.C.S.	96-97
134 Mibro Company	111
135 Micro World Electronix	47
136 Montgomery Grant	103
NRI Schools	681
137 Precision Data Products	75
138 Professional Handicapping Systems	100
139 Pro-Tech-Tronics	72
140 Q-Link	1
141 Renco Computer Printer Supply	54
142 S & S Wholesalers	105
Schnedler Systems	94
143 Soft-Byte	116
144 Software Discounters of America	94-95
Software Support International	13
Software Support International	98-99
145 subLOGIC Corporation	15
146 Superior Micro Systems	72
147 Surfside Components International	77
148 TC Electronics	100
Tektonics Plus, Inc.	100
149 Tenex Computer Express	109
150 Triad Computers	114
151 Tussey Computer Products	28-29
152 Ultrabyte	63
153 Utilities Unlimited, Inc.	36-37

COMPUTE! Books' Warehouse
 Clearance Sale

55

THUNDERCHOPPER!

Introducing ThunderChopper, the new standard of excellence in helicopter simulation! ThunderChopper combines SubLOGIC graphics technology with strategies and tactics by Colonel Jack Rosenow, USAF (Ret.). This simulator truly was a labor of love for the Colonel:

"I'm a chopper pilot with over 9,000 hours of flight time. Let me put you at the controls of an advanced Hughes 530MG Defender. No other helicopter simulator is as responsive to your control input, or as satisfying to fly. Start yourself out on the flight training grounds. My concise documentation will have you flying in minutes.

"Once you've attained a level of flying proficiency, you're ready to train for one of the most important duties a helicopter pilot can perform - the location and rescue of downed pilots.

"After you've mastered flight and rescue techniques you're ready for combat. Multiple scenarios let you test your skills under a variety of combat conditions. Escort ground troops through enemy territory. Or rescue the survivors of a major sea battle. You'll have to become adept at selecting and controlling your ordnance, and at using sophisticated electronic weapon/defense systems to locate, identify, and destroy enemy targets.

"ThunderChopper is the most realistic helicopter simulation you'll ever fly. Try ThunderChopper - the excellence comes through."

Colonel John B. Rosenow, USAF (Ret.)
President, ActionSoft Corp.

See Your Dealer...

Or write or call for more information. ThunderChopper is available on disk for the Commodore 64/128 and Apple II computers. For direct orders please indicate which computer version you want. Enclose \$29.95 plus \$2.00 for shipping (outside U.S. \$6.95) and specify UPS or first class mail delivery. Visa, MasterCard, American Express, and Diners Club charges accepted.

© 1987 ActionSoft Corporation
3D graphics and special effects courtesy SubLOGIC Corp.
Commodore 64 and Commodore 128 are registered trademarks of Commodore Electronics Ltd.
Apple is a registered trademark of Apple Computer, Inc.



Colonel Jack provided the strategy and tactics for ThunderChopper



Rescue Mission - scan for flares



Escort troops through enemy territory - search and destroy enemy targets

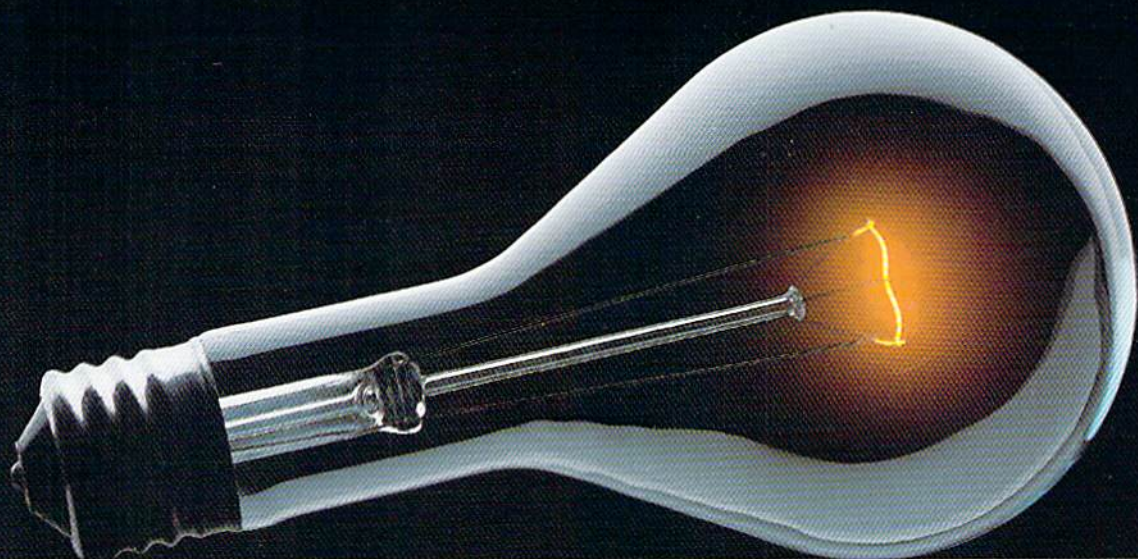
ACTIONSoft

GENERATIONS AHEAD IN STRATEGY ACTION SOFTWARE

122-4 S. RACE ST. URBANA, IL 61801

(217) 367-1024

**-\$29.95-
Better Engineering at a Better
Price**



COMPU SERVE. YOU DON'T HAVE TO KNOW HOW IT WORKS TO APPRECIATE ALL IT CAN DO.

CompuServe is a computer information service. You subscribe to it. In return, you have access to an incredible amount of information, entertainment, communications and services. Here are a few of the hundreds of things you can do.

COMMUNICATE

CB Simulator features 72 channels for "talking" with other subscribers. National **Bulletin Boards** let you post messages where thousands will see them. Friends, relatives and business associates can stay in touch through **EasyPlex™ Electronic Mail**.

More than 100 **CompuServe Forums** welcome participation in discussions on all sorts of topics. **Software Forums** help with online solutions to software problems. **Hardware Support Forums** cater to specific computers. There's even free software, and online editions of computer periodicals.

HAVE FUN

Play all sorts of sports and entertainment trivia games, brain-teasing educational games plus TV-type game shows with "live entertainment." Or, for the ultimate in excitement, get into an interactive space adventure.

SHOP

THE ELECTRONIC MALL™ takes you on a coast-to-coast shopping spree of nationally known merchants, without ever leaving home.

SAVE ON TRIPS

With CompuServe's travel services you can scan flight availabilities, find airfare bargains and even book your own flights online. Plus, there are complete listings of over 28,000 hotels worldwide.

BE INFORMED

CompuServe puts all of the latest news at your fingertips, including the AP news wire, the *Washington Post*, the *St. Louis Post-Dispatch*, specialized business and trade publications and more. Our executive news service will electronically find, "clip" and file news for you to read whenever you'd like.

INVEST WISELY

Get complete statistics on over 10,000 NYSE, AMEX and OTC securities. Historic trading statistics on over 90,000 stocks, bonds, funds, issues and options. Five years of daily commodity quotes. Updates on hundreds of companies worldwide. Standard & Poor's Value Line. Over a dozen investment tools.

So much for so little.

All you pay is a low, one-time cost for a Subscription Kit (suggested retail price \$39.95). The low cost, standard rate for online time is just 10¢ a minute, 24 hours a day. In most major metropolitan areas you can go online with a local phone call. Plus, you'll receive a **\$25.00 U.S. Introductory Usage Credit** with the purchase of your CompuServe Subscription Kit.

So easy the whole family can go online.

CompuServe is "menu-driven," so beginners can simply read the menus (lists of options) that appear on their screens, then type in their selections. If you ever get lost or confused, type H for help. Remember, you can always ask questions online through our feedback service or phone our Customer Service Department.

Before you can access CompuServe, you need a computer, a modem (to connect your computer to your phone) and, in some cases, some simple communications software. Now you're ready to order. For your low, one-time subscription fee, you'll receive:

- a complete, easy-to-understand, 200-page spiral-bound Users Guide
- your exclusive preliminary password
- a subscription to CompuServe's monthly magazine, *Online Today*
- a \$25.00 usage credit!

To buy a CompuServe Subscription Kit, see your nearest computer dealer. To receive our informative brochure or to order direct, write or call **800-848-8199** (in Ohio or Canada, 614-457-0802).

CompuServe. You don't have to know how it works to appreciate all it can do—for you.

CompuServe®

Information Services, P.O. Box 20212
5000 Arlington Centre Blvd., Columbus, Ohio 43220

An H&R Block Company
EasyPlex and THE ELECTRONIC MALL are trademarks of
CompuServe Incorporated